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NOVEMBER 1987
VOLUME 5
NUMBER 11

SPECIAL FEATURE: YOUR GUIDE TO DESKTOP PUBLISHING

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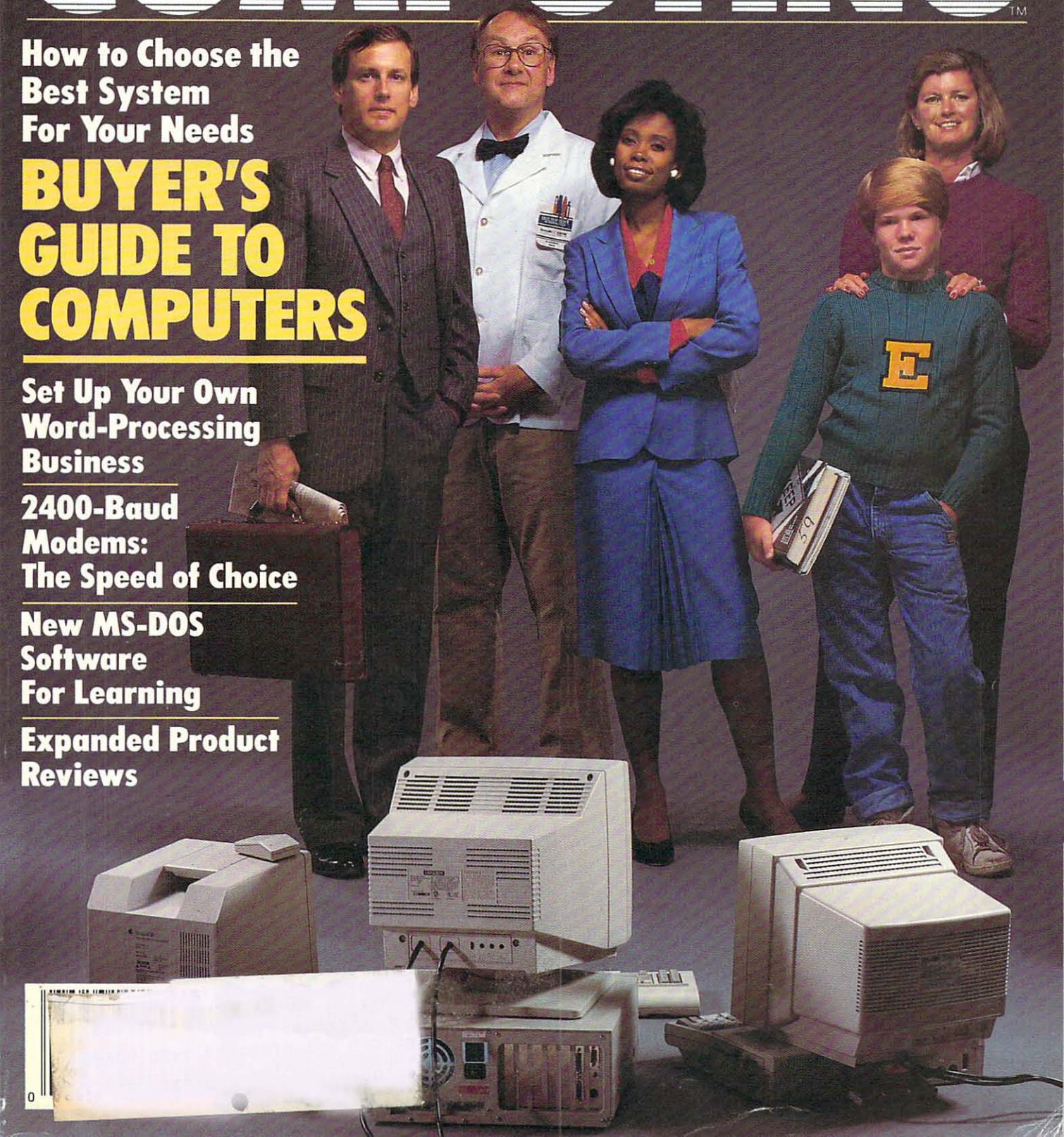

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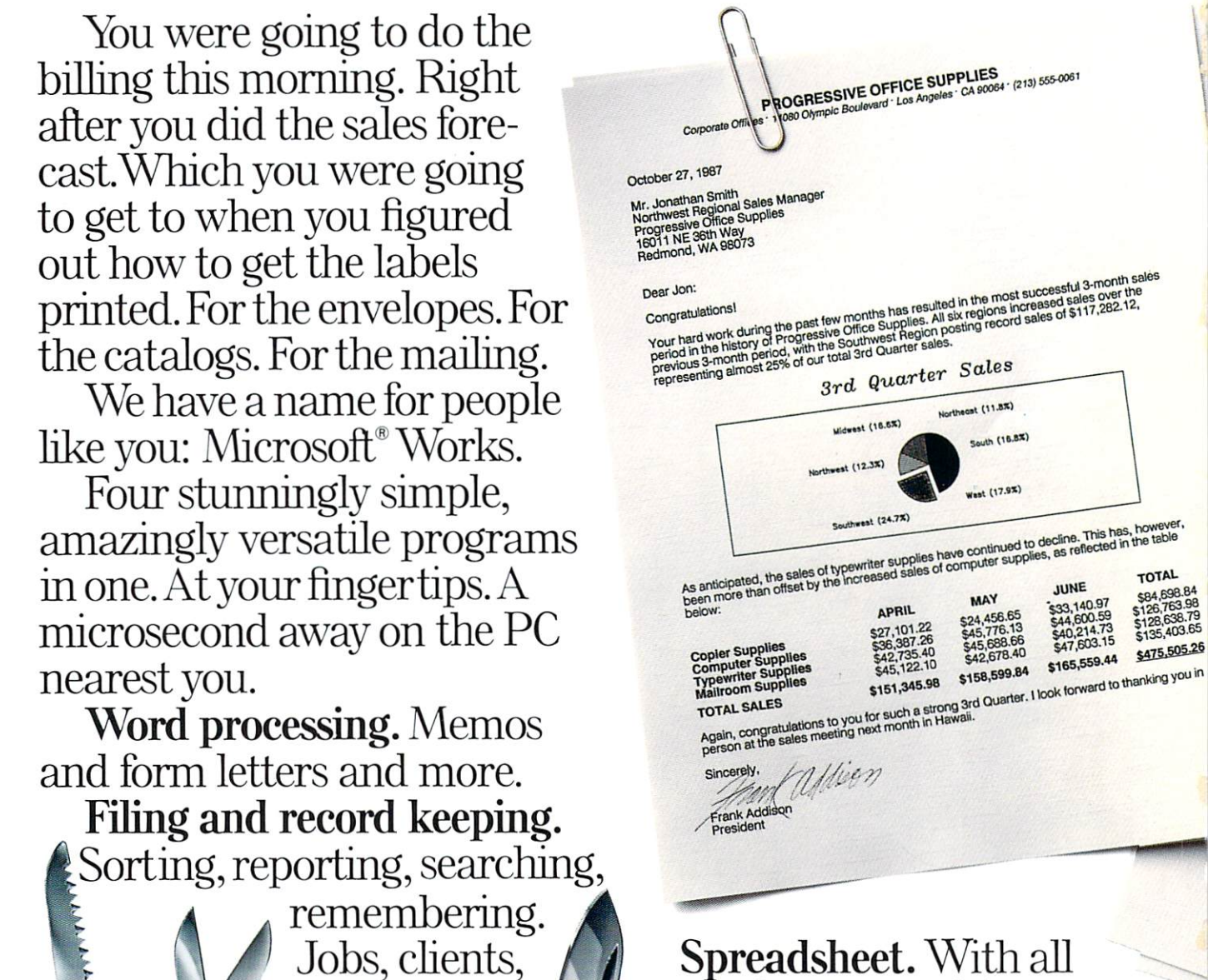

PROGRESSIVE OFFICE SUPPLIES
Corporate Offices · 11080 Olympic Boulevard · Los Angeles · CA 90064 · (213) 555-0061

October 27, 1987

Mr. Jonathan Smith
Northwest Regional Sales Manager
Progressive Office Supplies
16011 NE 36th Way
Redmond, WA 98073

Dear Jon:

Congratulations!

Your hard work during the past few months has resulted in the most successful 3-month sales period in the history of Progressive Office Supplies. All six regions increased sales over the previous 3-month period, with the Southwest Region posting record sales of $117,282.12, representing almost 25% of our total 3rd Quarter sales.

3rd Quarter Sales

As anticipated, the sales of typewriter supplies have continued to decline. This has, however, been more than offset by the increased sales of computer supplies, as reflected in the table below:

	APRIL	MAY	JUNE	TOTAL
Copier Supplies	$27,101.22	$24,456.65	$33,140.97	$84,698.84
Computer Supplies	$36,387.26	$45,776.13	$44,600.59	$126,763.98
Typewriter Supplies	$42,735.40	$45,688.66	$40,214.79	$128,638.79
Mailroom Supplies	$45,122.10	$42,678.40	$47,603.15	$135,403.65
TOTAL SALES	$151,345.98	$158,599.84	$165,559.44	$475,505.26

Again, congratulations to you for such a strong 3rd Quarter. I look forward to thanking you in person at the sales meeting next month in Hawaii.

Sincerely,

Frank Addison
President

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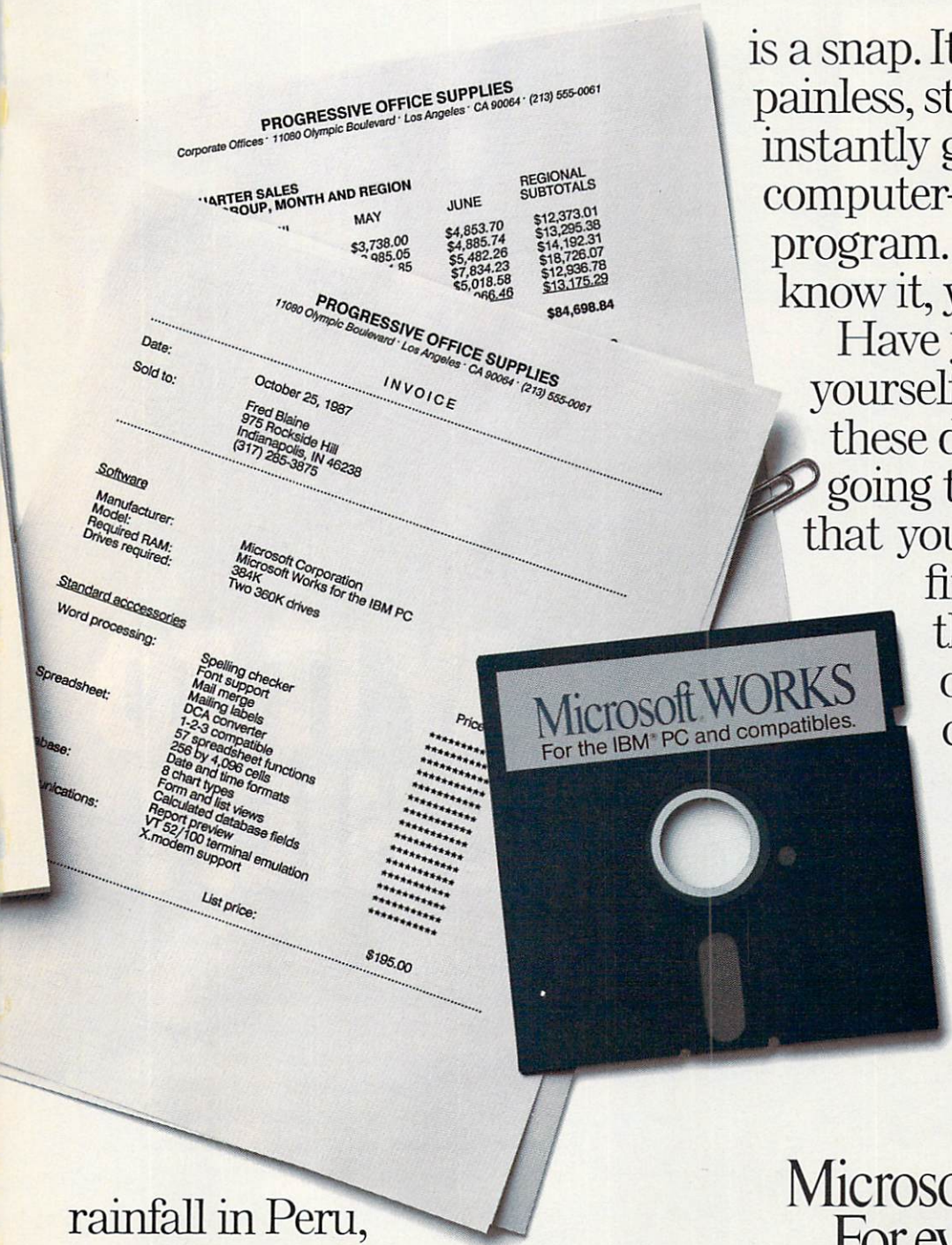
not one thing, it's another.



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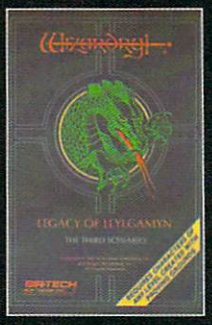

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The Fourth Scenario

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NOVEMBER
1987

FAMILY & HOME OFFICE COMPUTING™

VOLUME 5
NUMBER 11

COVER STORY

43
BUYER'S GUIDE TO COMPUTERS
Start your computer shopping with our semi-annual guide to systems. Choose from a selection of powerful MS-DOS machines, sophisticated mouse-based computers, and time-tested classics; more than two dozen popular models in all.

SPECIAL FEATURE

57
A GUIDE TO DESKTOP PUBLISHING
Here's how you can create professional-quality newsletters, advertisements, even magazines and books. Includes reviews of Macintosh and MS-DOS desktop-publishing software.

PERSONAL FINANCE

14
STAYING IN BALANCE
Organize your finances and make bill-paying easier with check-writing programs such as *Quicken*.

THE OFFICE AT HOME

10
FACSIMILE PHONES
Send text and graphics anywhere, instantly—for the price of a telephone call.

53
HOW TO START A WORD-PROCESSING BUSINESS
Five entrepreneurs reveal their six steps to successful home-based businesses.

64
HOME-OFFICE SHOPTALK
by Joanne Pratt
Down-to-earth answers to readers' questions. The second in a series.

TELECOMPUTING

18
A GUIDE TO 2400 BAUD MODEMS
Learn why 2400-baud is rapidly becoming the speed of choice for telecommunications. PLUS: Specifications of 26 modems from major manufacturers.

EDUCATION

22
HOME-SCHOOL CONNECTION: IBM DOESN'T ALWAYS MEAN BUSINESS
Discover the outstanding educational software now available for IBM and compatible computers. Reviews of 19 programs for reading, writing, spelling and vocabulary, grammar, and math.

PRODUCT ANNOUNCEMENTS & REVIEWS

70 HARDWARE
PRODUCT REVIEWS
The Amiga 500 computer; the Canon Faxphone 10; Plus USA's hand-held copier; Royal's Signet 100 electronic typewriter; Seikosha's dot-matrix printer; TAC3 and TAC5 joysticks from Suncom; and Thomson's Ultra Version EGA card.

78 SOFTWARE
SOFTWARE GUIDE & REVIEWS
A guide to 24 new and noteworthy programs for Home Business & Productivity, Education & Creativity, and Entertainment. PLUS: Longer reviews of several programs.

ENTERTAINMENT

28
This month's news and rumors: *John Madden Football*; a Lucasfilm game; Gamestar's newest sports simulation; and PBI's *Tower of Myraglen* for the IIGS. PLUS: Game conversions to new machines and hints for *Dark Castle*, *Gridiron*, and *Ogre*.

SOFTWARE APPLICATIONS & UTILITIES

66
GETTING MORE FROM PC-DOS AND MS-DOS: PART II
Liberate yourself from complicated DOS commands with DOS-shell menus. Here's a mini-buyer's guide to help you choose software.

DEPARTMENTS

4
EDITOR'S NOTE

6
LETTERS

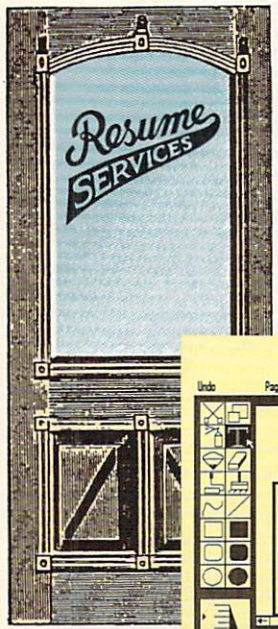
34
FAMILY COMPUTING
THIS MONTH'S PROFILE: The Dial family of West Frankfort, Illinois. NEXT MONTH: Answers to readers' computing questions.

36
MACHINE SPECIFICS
News, opinions, quotes, and rumors from and about Apple, Atari, Commodore, IBM and MS-DOS, Tandy, and orphaned computers.

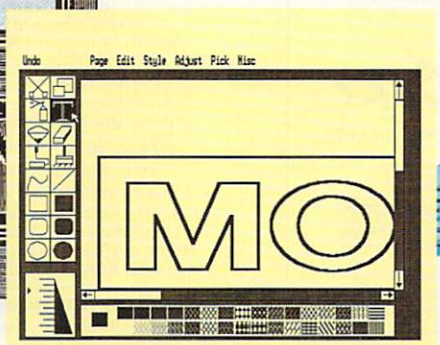
95
THE PROGRAMMER
News, machine coverage, corrections, and last month's *Crossword Puzzler* solution. PROGRAMS THIS MONTH: *Home Inventory Manager* (Productivity Program); *Turkey's Revenge* (Thanksgiving Program); Thanksgiving *Crossword Puzzler* (Puzzle); *Cradle Song* (Microtones).*
*See program for specific computer models and hardware requirements.

126
THE CLASSIFIEDS

128
ADVERTISER INDEX



Page 53



Page 57

Page 43

Page 70

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COVER PHOTOGRAPH BY JOEL WHITE

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EDITOR'S NOTE
A QUESTION OF CHOICE

The position from which it's often hardest to judge something is right in the middle. And that's just where we are in terms of the growing home-office, or work-at-home, phenomenon.

Newly released figures from LINK Resources of New York indicate that the number of home office workers now tops 23 million and is growing at a rate of 6.9 percent annually. Does this mean that one day we'll wake up to find our corporate offices deserted and our subways, buses, trains, planes, and highways commuterless? Not on your life.

Thanks first to the microcomputer, and now to the technological advances in personal telephones, facsimile machines, copiers, and other standard office fixtures that have become compact enough and inexpensive enough to bring into the home office, we've broadened our work-related options. And most home-office workers feel that with fewer distractions than they would face in a conventional office, they increase their productivity.

But not everyone wants to or can work from home all the time. What is happening, I believe, is that we're breaking down some long-held definitions of work, office, and office hours. Our work arrangements and understandings are getting looser.

I've written before about the situation at FAMILY & HOME-OFFICE COMPUTING. Technical Editor Joey Latimer divides his time between his home and a small office, both in southern California. He visits our editorial offices in New York once or twice a year. Senior Editor Nick Sullivan travels back and forth between New York and Massachusetts. (In fact, as I write this, I realize that I haven't seen Nick in weeks, even though I have read the articles he wrote and edited for this issue.) The rest of us work at home a day here and a day there, as best suits us.

Bosses, too, now have more choices. Philippe Kahn, President

and CEO of Borland, is an extreme example—a company head who rarely goes into the office.

Other company heads I know or know of choose to use their new freedom from their desks to extend their weekends and their vacations.

Before we can choose where to spend our time, we must make some other choices: Which computer system will we use? Can a fax phone make a big enough difference to warrant the purchase of one? What kind of modem will make us most efficient? These are some of the questions we deal with in this issue.

Our major buyer's guide to computer systems (page 43) helps you to match need to machine; our Office at Home department will bring you up-to-date on the newest developments in pricing and models of fax phones; and 2400-baud modems, a new standard, are covered in this month's Telecomputing department. Of course, our articles and departments on software and hardware and our special feature on desktop publishing will help you make other wise computing choices.

In fact, with every issue we try to help you make the wisest decisions possible in choosing the applications to best meet your needs and the products most suited to bring you the successes you seek through computing.

Claudia Cohl

CLAUDIA COHL EDITOR-IN-CHIEF

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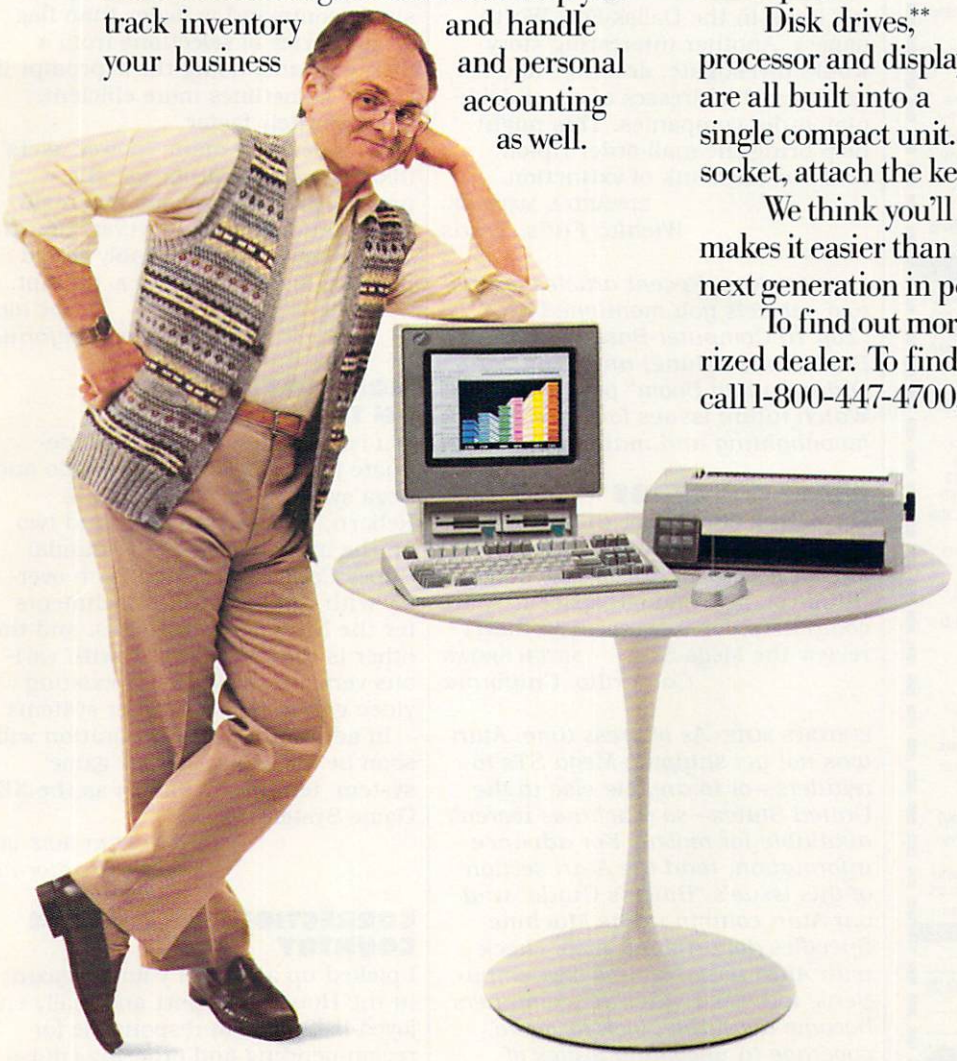
Small news from IBM.

Introducing a new low-priced, high-powered IBM Personal System/2.

It's called the Model 25, for short, and it comes with the power, graphics and quality that have made the IBM® Personal System/2™ family the acknowledged new leader in personal computing. What's more, it comes in a size that fits virtually anywhere and at a price that fits most any budget.

It's at home wherever you work.

Whether you work in an office, bring office work home or run a business from home, the Model 25 can help you keep up with correspondence, prepare proposals and balance budgets. It can also help you track inventory and handle your business and personal accounting as well.



The system works with the other members of the Personal System/2 family. And it was designed to run lots of the popular programs that are already available for IBM Personal Computers.*

It's at home wherever students learn.

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IBM Personal System/2	Model 25
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*Model 25 has one full-size and one eight-inch expansion slot.

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We think you'll find the new Model 25 makes it easier than ever for you to join the next generation in personal computing.

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*Differences in system configurations must be considered in selecting software. **Second disk drive optional. In Canada call 1-800-465-6600. © IBM 1987. IBM is a registered trademark and "Personal System/2" is a trademark of IBM Corporation.

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- ☐ **SIMULATION 1**—Maze making program, MIT's Life simulation, starfields, etc. Color graphics req.
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- ☐ **UTILITIES 3**—A comprehensive set of debugging and diagnostic utilities for monitoring your computer.

FC 11 87

NEW RELEASES/UPDATES

- ☐ **BUSINESS 2**—Expressgraph business graphics. Chart your data and find trends. Color graphics req.
- 2 **CAD 1a,b**—(2 disks) Fingerpaint 1.2 advanced painting and Altamira object oriented design. Color.
- 2 **CAD 2a,b**—(2 disks) DanCad3d, an advanced 2D/3D drafting program w/animation. 640K, color.
- 2 **COMM 2a,b**—(2 disks) Procomm 2.42, an excellent modem program with terminal emulation.
- ☐ **EDUCATION 3**—PC-Fastype 1.20 typing tutor, ideal for beginners and advanced students alike.
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- 3 **GRAPHICS 2a,b,c**—(3 disks) An excellent 3-D surface modelling and shading program. Color.
- 2 **INFO 2a,b**—(2 disks) Zip-Phone, national areacode/prefix to zip-code cross reference.
- 2 **LANGUAGE 3a,b**—(2 disks) The A86 3.09 macro assembler and debugger for 8088/86/286s.
- 2 **SHELL 4a,b**—(2 disks) Automenu and HDM II 4.04 hard disk prog. for custom full-screen menus.
- ☐ **UTILITIES 5**—Hard disk utilities for verifying, formatting, parking and optimizing your disk drives.
- ☐ **UTILITIES 6**—Advanced utilities including Mark/Release (remove resident progs w/o reboot!)
- ☐ **UTILITIES 7**—More advanced utilities including Masterkey (undeletes files from hard disks).
- 2 **WORD 1a,b**—(2 disks) PC Write 2.71, a powerful word processing system w/spell checker, laser supt.

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LETTERS

RISING MOONLIGHTERS

I work with computers daily as a pharmacist and have trained dozens of pharmacists to use them for prescription-filling and billing purposes. I'm planning to purchase one for myself this fall and start a moonlighting business at home. Your "Moonlighting" article in the August issue has given me incentive.

ARTHUR ROBY
Staten Island, New York

The story on moonlighting in your August issue intrigued me. For months I've been toying with the idea of earning some extra cash in the evening. If I could use my computer to earn money while enjoying the comfortable surroundings of my home, it would be ideal.

I'd like to see an article on getting started in part-time remote data-entry, since I'm having trouble finding leads in the Dallas-Fort Worth papers. Another interesting story would investigate, describe, and list names and addresses of dependable mail-order companies. This might help bring the mail-order rip-off artist to the brink of extinction.

EDWARD A. MATELSKI
Wichita Falls, Texas

EDITOR'S NOTE: *Recent articles on the two subjects you mentioned are "Top 10 Computer-Based Home Businesses" (June) and "The Mail-Order Buying Boom" (August). Watch future issues for more on moonlighting and mail order.*

ATARI COVERAGE

I've been a subscriber to your magazine for two years, and I like much of your coverage. But I really don't think you give enough space to Atari computers; for instance, you didn't review the Mega STs. MITCH BROWN
Camarillo, California

EDITOR'S NOTE: *As of press time, Atari was not yet shipping Mega STs to retailers—or to anyone else in the United States—so machines weren't available for review. For advance information, read the Atari section of this issue's "Buyer's Guide" and our Atari column in the Machine Specifics department. Also, check with Atari users' groups on CompuServe* (GO ATARI). *After the computers become available, look for more coverage in upcoming issues of* FAMILY & HOME-OFFICE COMPUTING.

I plan to renew my subscription, but *not* because of the Atari-specific articles (even your Machine Specifics department doesn't have much 8-bit Atari coverage). I'm renewing my subscription because of your many excellent articles on general computing subjects, particularly "The Mail-Order Buying Boom," in your August issue.

JOHN M. SCHULTZ
LAKE COUNTY ATARI
COMPUTER ENTHUSIASTS
Lindenhurst, Illinois

FAN OF THE A› PROMPT

In the article "Tandy Strengthens MS-DOS Line" (September), your comments regarding the A› prompt irked me.

I use an IBM PC almost every day, and I like the A› prompt. It does what I tell it to, *now*, without other steps getting in the way. Face it, typing a single command is faster than flagging a series of selections from a menu. To me, using the A› prompt is easier, sometimes more efficient, and definitely faster.

I wonder how many "power users" (like me) would rather use the A› prompt than a cumbersome menu system. I do admit, however, that if I were a new user, I probably would hesitate to deal with the A› prompt.

ERIC HILL
Orange, California

MORE JOYSTICKS ON THE MARKET

You comment on the lack of adequate joysticks for the Nintendo and Sega systems in "Video Games Reborn," (July), but I've found two on the market. One is the Bandai Super Controller, which is an overlay with mini-joystick attachments for the Nintendo controllers, and the other is the Epyx 500XJ, with various versions available for existing video games and computer systems.

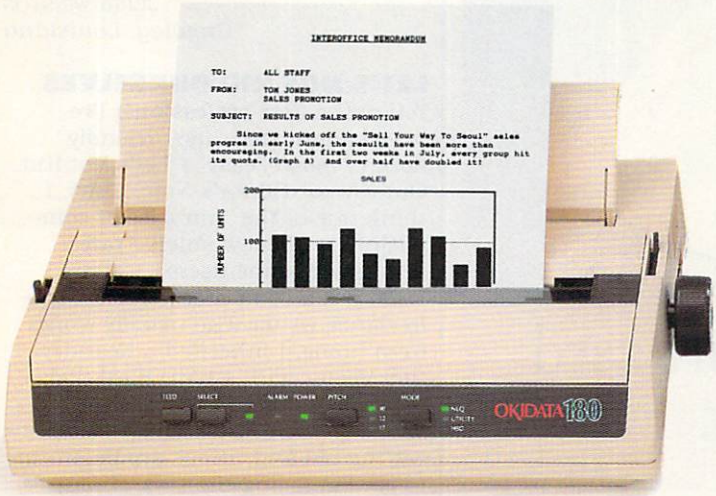
In addition, Atari Corporation will soon be releasing another game system, tentatively known as the XE Game System.

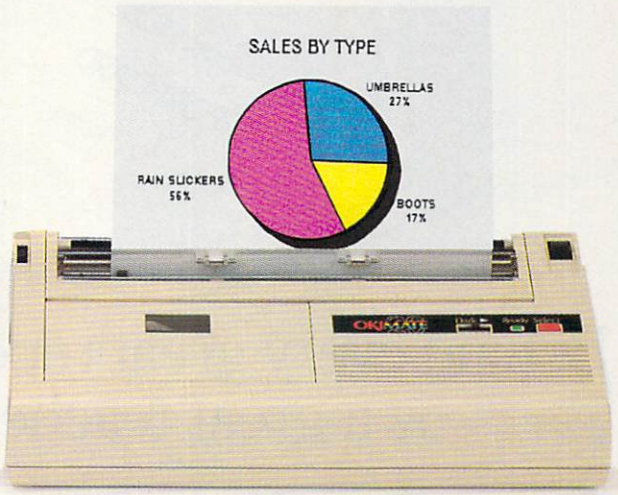
ROBERT RUIZ, JR.
Fresno, California

CORRECTION FROM CAJUN COUNTRY

I picked up a copy of your magazine in the Houston airport and really enjoyed it. Since I'm responsible for recommending and ordering educational software for Acadia Parish, I

All work and some play.





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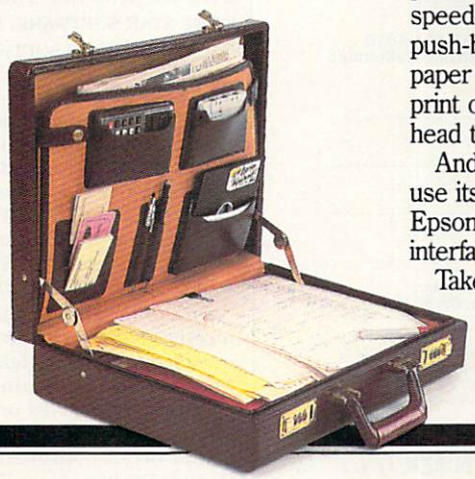

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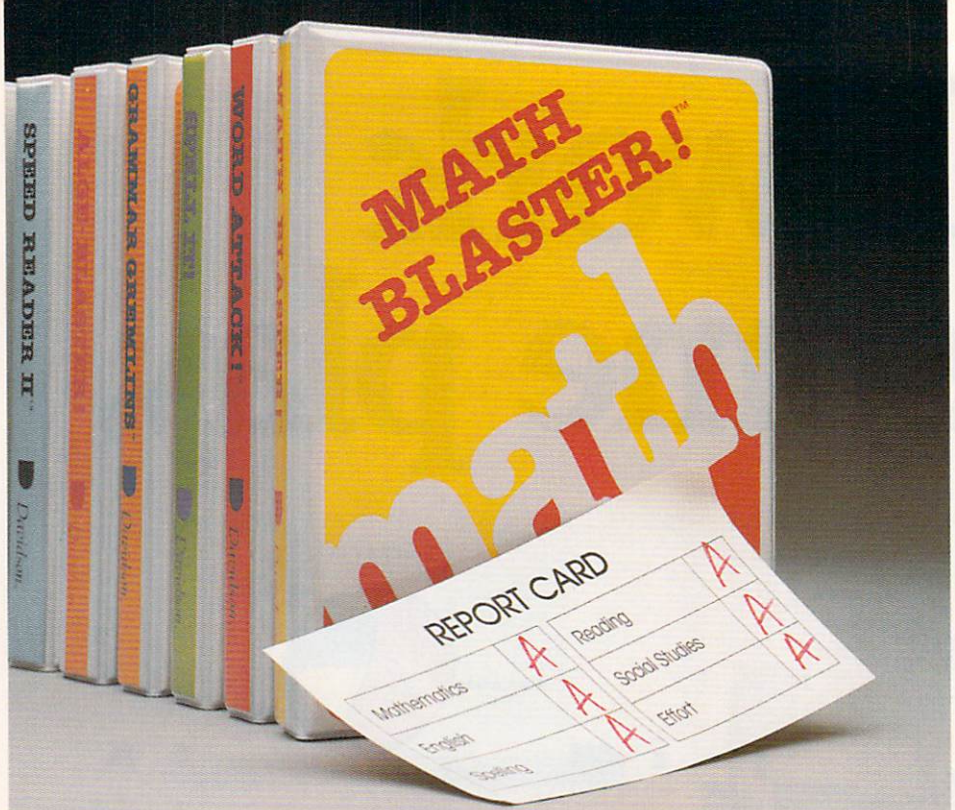

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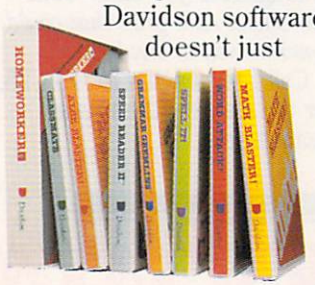

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CIRCLE READER SERVICE 11

LETTERS

enjoyed your Software Guide section.

One minor correction: In your review of *Big Blue Disk*, you referred to Shreveport as Cajun country. Not all of Louisiana is Cajun country. There is an invisible line that runs across the state, dividing north and south Louisiana. Cajun country is south of that line and if you want good Cajun food, please don't try to find it in the northern part of the state!

JERRY WINSTON
Crowley, Louisiana

LET'S NOT KID OURSELVES

You're the first professional I've heard admit that "user-friendly" doesn't mean "easy" ("Let's Not Kid Ourselves," Editor's Note; July). I think one of the "miracles of computing" is the low suicide rate among first-time users.

I'm not a computer person; I'm a freelance writer who usually works from home. I inherited a Neanderthal Vector with a 5MB hard disk operating under CPM 86, with *Memorite* software—which I love. It's getting old and things are beginning to go. I'm facing the task of replacement and dreading it for the reasons you stated.

Your Editor's Note made me feel better.

LIN COCHRAN
Largo, Florida

SPECIAL THANKS

FAMILY & HOME-OFFICE COMPUTING would like to add the following companies to the list of those who contributed software to our 1987 Computing Family of the Year fifth-prize winners (September 1987, page 53): FIRST STAR SOFTWARE; INFOCOM; MEGAHAUS; PRECISION SOFTWARE; and QUICKSOFT.

FAMILY & HOME-OFFICE COMPUTING *looks forward to letters from readers. Please direct your correspondence to: Letters to the Editor,* FAMILY & HOME-OFFICE COMPUTING, *730 Broadway, New York, NY 10003. Include your name, address, and telephone number. We reserve the right to edit letters for length and clarity.*

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THE OFFICE AT HOME

FACSIMILE PHONES
The Latest Phones Send Documents For the Costs of Regular Calls

BY ROBERT E. CALEM

Today, one in every five American workers does some job-related work at home. Many "telecommute" via computers and telephones, and the electronics industry that serves them is finally awakening to their needs for quick and easy links to the outside world. Facsimile machines—sophisticated devices that produce copies of images and data sent over ordinary telephone lines and once found only in corporate America—can provide that link.

Fax machines are now smaller and less bulky. They're often integrated with telephones and double as copiers, thus providing three machines in one. In general, fax machines copy and send any 8.5-inch-wide piece of paper with text and pictures, no matter how long the document is. Fax machines can receive these fax files while unattended, though only the most expensive machines can *send* files unattended. For instance, you might want to send files late at night when phone rates are lower. This year, fax phone prices—which hovered around $4,000 only two years ago—fell to less than $1,000. Wider distribution means fax phones are available to almost anyone within reach of a department store, specialty phone store, or discount merchandiser.

The Sharp UX-80 fax phone can transmit directly from an open book.

Home-office demand for low-cost fax machines is expected to rise 200 percent in 1987 and to triple annually until 1992, according to Scott McCready, a senior industry analyst at CAP International, a market-research firm that tracks imaging products. Why? The cost of a facsimile transmission is as low as the cost of a local telephone call, and information can be exchanged much more quickly than if it were sent by overnight courier. In other words, transmission is fast and cheap.

The Medbar Porta Fax III is a portable fax machine that can send files from any phone.

In fact, as with a computer modem, it's the speed at which a fax machine will scan and transmit a document that defines its place in today's market. But, fax machines are different from modems, which send only computer-generated material that must be received by another computer (*see "Modems Vs. Fax Phones"*).

TYPES OF FAX PHONES

There are three methods by which a fax scans an image. MH, for Modified Huffman (also known as The Huffman Scheme), is the most common. With MH, the machine compresses each line by identifying changes from black to white. MR, for Modified Read, compresses vertical and horizontal lines. White Line Skip (WLS) automatically skips over white space and goes directly to black. WLS is the fastest scan method and can be found only on the more expensive machines, none of which are covered here.

There are also three groups, or types, of fax machines. Group One (G1) machines, the slowest, will take four minutes or longer to exchange a single page with a similar machine, regardless of the distance. They're considered obsolete and are no longer manufactured.

Group Two (G2) machines need about two-and-one-half minutes per page. The fastest machines—the Group Three (G3) type—will transmit a page in less than 40 seconds, with some averaging as low as 15 seconds. G3 fax machines account for the vast majority of fax usage.

In fact, all new, low-cost facsimile machines available to the home-office user are G3 models. Some, not all, can receive transmissions from G2 and G1 models. All can double as copiers, but use thermal-type coated paper that produces copies similar to the old-fashioned thermal printers. Most fax machines are integrated with sophisticated telephones, and one even features a telephone answering device (TAD). Store prices generally range between $1,400 and $2,000, though the Sharp UX-30 Memofax sells for about $900.

The Panasonic KX-F115 fax phone includes a telephone answering device and a speakerphone.

THE MAJOR PLAYERS

Last year, Canon became the first company to create a fax phone for home-office users, introducing the FaxPhone 10 to local mass-market retailers across the country. Canon's model, originally priced at $2,495 but since reduced to $1,995, set the standard for low-cost G2 and G3 compatible personal-fax machines.

The FaxPhone 10 offers its users a claimed transmission speed of 17 seconds per page, one-touch dialing for 16 fax numbers, an additional six numbers in speed-dialing mode, one-touch overseas dialing, five-page automatic document feeder, liquid crystal display (LCD) with interactive

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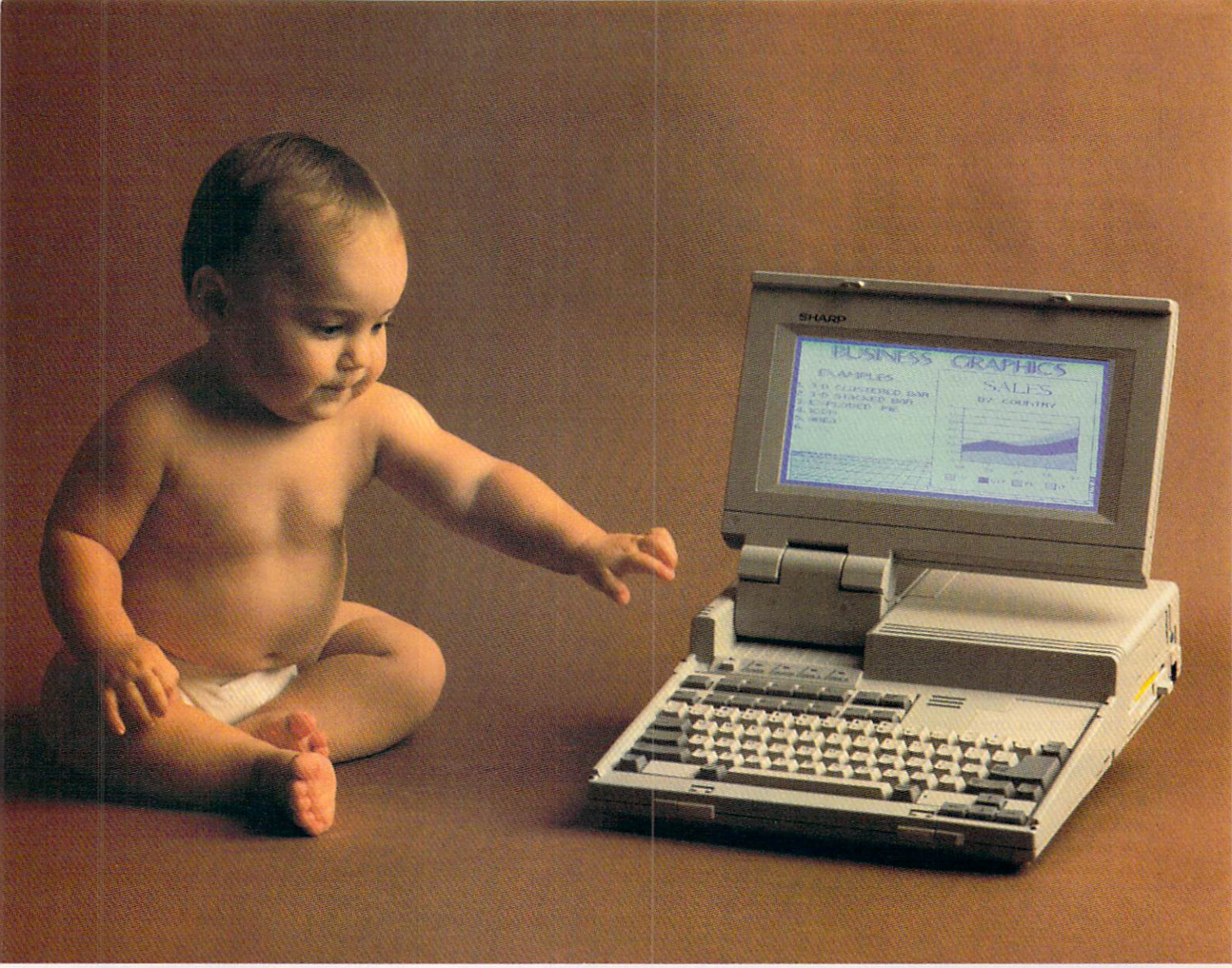
ROBERT E. CALEM *is Home Office Electronics Editor for* TWICE (This Week in Consumer Electronics), *an industry newsweekly.*



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CIRCLE READER SERVICE 42

prompts, and a full-featured integrated telephone. The phone also offers auto-dialing for 16 voice numbers, on-hook dialing with automatic redial, speakerphone, muting, and built-in hold melody.

Sharp's UX-30 Memofax ($900) is a G3 fax machine that will send and receive only notepad-size documents. Sharp claims a transmission speed of just 20 seconds—or twice as fast as for regular-size documents. Incoming transmissions of original 8.5-by-11-inch documents are automatically reduced to 4.25-by-5.5 inches for printing. A "fine mode" allows small typeface characters to be printed with greater clarity. An integrated telephone boasts one-touch dialing for three telephone numbers, 10-number speed-dialing, automatic redial, on-hook dialing, and pause key.

A step-up model from Sharp is the UX-80 ($1,500) copier-facsimile machine. Unique to this G2/G3-compatible unit is the ability to transmit directly from an open book or produce a copy of that document. All other facsimile machines in this price range will only accept single-sheet document feeding. Document size is a maximum 8.5-by-11 inches, and a 40-second transmission speed is claimed.

The Canon FaxPhone 10 sends the page in 17 seconds and also includes a speakerphone.

Brother's Fax 100 ($1,500), a G3 fax phone, also offers a fine mode. Its built-in telephone has automatic dialing for nine telephone numbers, automatic redial of last number, and ringer volume control.

An interesting device from Panasonic is a brand new fax-phone/telephone-answering device from the company's telephone division. The Pansonic KX-F115 ($1,995) is G2/G3 compatible and will transmit a page in less than 30 seconds, according to Panasonic. Because it also will answer a call to take a message, the KX-F115 "senses" whether the incoming call is voice or data and automatically switches to the proper mode. Page printout size is a nonstandard 8-by-10 inches. The integrated speakerphone/telephone has one-touch dialing, mute, and automatic last-number redial, which is activated by a busy signal.

Toshiba's Personal Facsimile ($1,999) is G2/G3 compatible with a claimed transmission speed of 15 seconds. It has a talk-request feature—which allows the user to retain a vocal telephone link after a document has been sent or received. This saves the user the cost of an additional phone call. The Personal Facsimile's telephone offers on-hook dialing, memory for 50 voice and 50 facsimile numbers, last-number redial, music on-hold with a selection of three melodies, adjustable ringer volume, and hold-recall warning tone.

Toshiba makes the Faxline fax phone for Northwestern Bell ($2,100), and it's essentially the same as the Personal Facsimile, except without the music-on-hold option. It does have the added advantage of an automatic five-page feed.

PORTABLE UNITS

Just as there are portable computers and modems, there are now portable facsimile machines. Travelfax ($1,300), from Northwestern Bell, is a G2-only machine that weighs less than eight pounds and fits into a briefcase. It's powered by a rechargeable battery that provides enough energy to send or receive 15 pages; it also will recharge in three hours. A combination recharger-AC adapter is bundled with Travelfax. The fax is rather slow, however, with a transmission speed of three minutes per page.

Northwestern Bell also includes an acoustic coupler—which attaches to the handset of public phones—a head-cleaning tape, and 100 sheets of receiving paper. The single available option is an adapter that allows the Travelfax to be plugged into an automobile's cigarette lighter for power.

A G3-only portable unit is available from Medbar Enterprises, a small-office electronics firm based in Woodside, New York. The battery-operated PortaFax 111 costs $1,995. Features include auto answer, AC adapter-charger, automobile cigarette lighter adapter/charger, removable handle, and an acoustic coupler, which allows remote access from most telephones. Medbar claims a single charge of the battery is good for 25 pages of transmission or reception. Recharge time is said to be half an hour.

According to the manufacturers, future fax phones may have the ability to function on two telephone lines simultaneously, scan images into personal computers via serial port links, or act as telex-typewriter units with optional keyboards. Group Four (G4) machines—faster still than G3—are already available at prices of $4,000 or higher. As fax machines become even more prevalent in home offices across the country, prices will drop even further and manufacturers will have more incentive to add features.■

MODEMS VS. FAX PHONES

Does the emergence of relatively inexpensive fax phones spell the end of computer transmissions via modem? Yes and no. If you want to send a computer file to another person so that it can be edited or changed, you'll want to keep the file in a computer format, and that means transmitting it via modem. The drawback to modem transmission, in most cases, is that the receiver also must have a computer and a modem, unless you send electronic mail that is laser printed and delivered as regular mail.

Fax phones excel in sending office memos, notes, and short documents—especially those with pictures—that aren't in computer format. Rather than sending such a document by overnight mail (expensive), typing it into a computer (time-consuming), or scanning it into a computer (requires a scanner)—you can send it in less than a minute for the cost of a phone call.

Already, however, the two technologies are merging. For instance, you can buy facsimile cards that will let you transfer facsimile files from your MS-DOS computer to a fax machine. The new AppleFax Modem *(see this month's Machine Specifics department)* turns the Macintosh into a fax machine and functions as a 9600-baud modem. Of course, to enter material that is to be transmitted into the computer, you need a scanner, so the system can be unwieldy. For now, it's best to keep modems and fax phones separate in your mind.

—NICK SULLIVAN

COMPANY PHONE NUMBERS

Brother International (201) 981-0300; Canon (516) 488-6700; Medbar Enterprises (718) 335-0404; Northwestern Bell (402) 390-8600; Panasonic Company (201) 348-7000; Sharp (201) 529-8200; Toshiba (714) 583-3700.

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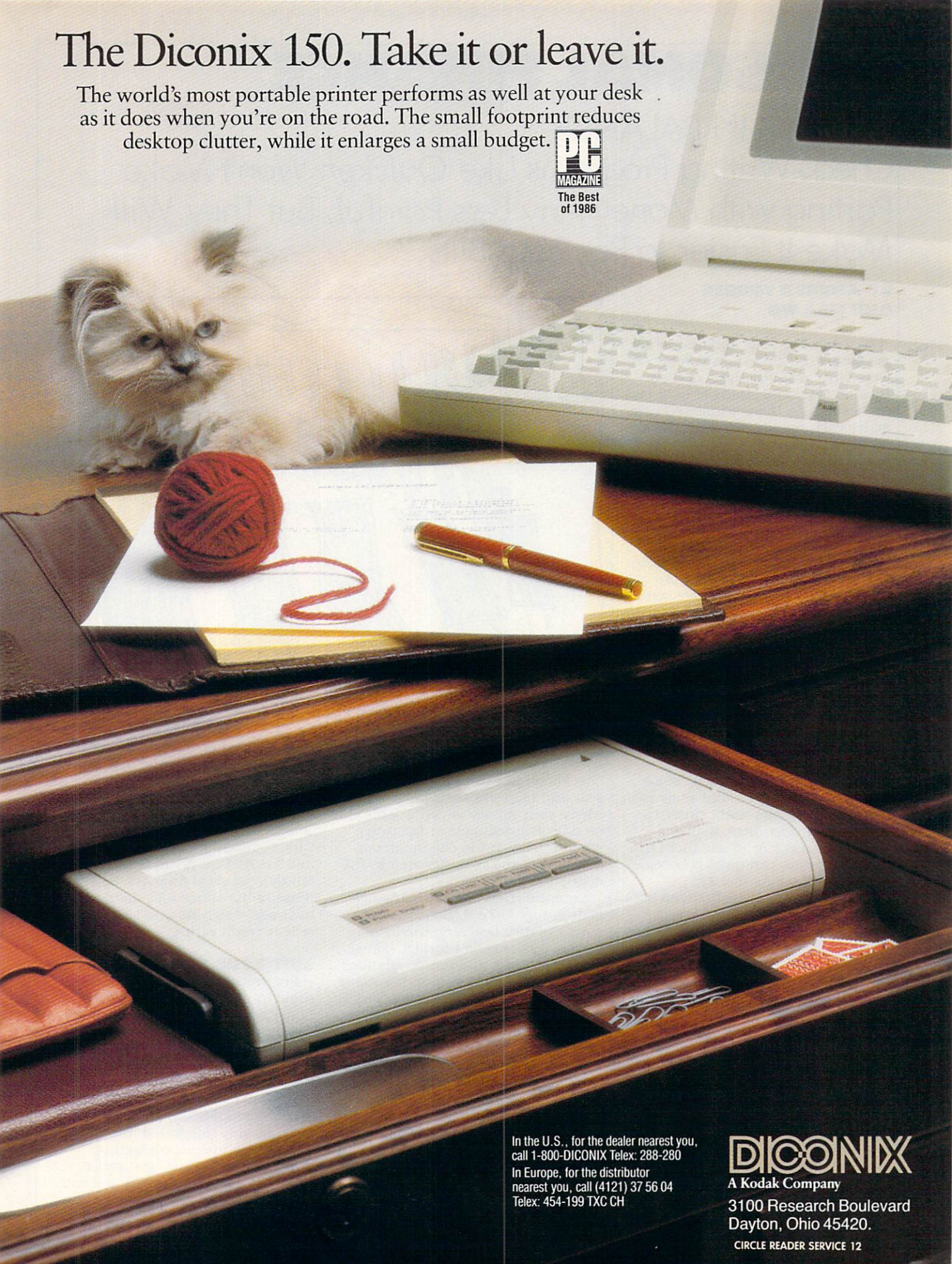

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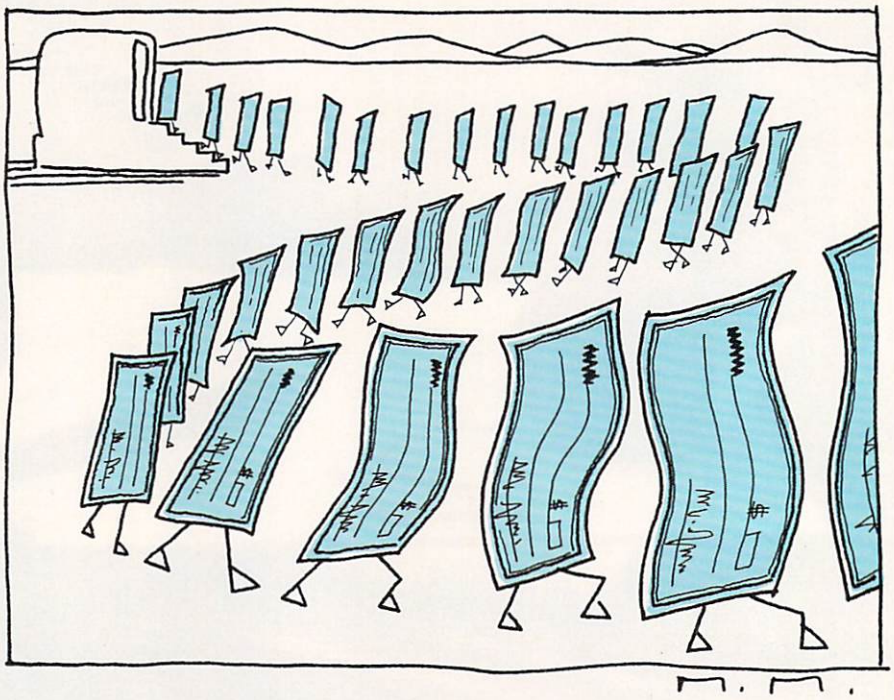
CIRCLE READER SERVICE 12

PERSONAL FINANCE

STAYING IN BALANCE

Check-Writing Programs Like *Quicken* Won't Make Parting with Money Any Less Painful, But They *Will* Make It Easier to Pay Your Bills

BY ANDREW TORRES AND LISA WU



"I hated paying bills and frequently postponed the ordeal until some were late," said Pat Hales of Glen Burnie, Maryland. Many of us know the feeling. As those windowed bills arrive each month, we stack them on desks, atop refrigerators, or next to telephones, vowing to take care of them later. Later often becomes late.

Hales has changed her ways. She now uses *Quicken* ($50, Intuit), a check-writing program, and is proud to report that her payments always arrive at their destinations on time.

Stand-alone check-writing programs and financial packages with checkbook sections alleviate the confusion and the drudgery of managing your expenses and can cut in half the time you spend keeping tabs on your money. The advantages of these computerized financial organizers are many. You can use them to "memorize" transactions that you make regularly; they retally your balance whenever you write out a check; they keep a database of all the checks you write; and some even use your computer and printer to print out checks. Best of all, you needn't be a C.P.A. to use these programs. Novices can quickly become adept at managing money.

Paula Galland, a teacher who lives on St. Simons Island in Georgia, never even attempted to balance her checkbook. If her monthly bank statement was within $100 of her own "guesstimation," she let it slide. When she first heard about *Quicken*, she knew it was for her. Today, she balances her checking account to the penny and once even caught a bank mistake.

IN CONTROL OF YOUR FINANCES

Although computerizing your checking account may take some time at first, it will be time well spent. Programs that manage your checkbook put you in the driver's seat and help you keep track of where your money is going. This can be especially valuable at tax time, when you'll want to call up all payments that you've designated as tax deductible.

Computerized check writing is a godsend to Joyce R. Scheer, who runs Creative Learning Environments, a tax-exempt health, educational training, and public-relations consulting business, from her home in Clearwater, Florida. Using *Checks & Balances*, a $75 checking-budgeting program published by CDE Software, Scheer can now keep accurate records of tax-deductible expenses.

Some programs also will remind you when regular payments are due without your booting up the program. (For instance, if you have an IBM PC, a PS/2, or a compatible with a hard-disk drive, you can set up *Quicken* to remind you that a bill is due when you turn on your computer.) Carefully timed payments can help you accrue the highest possible interest on your money and will help you maintain a good credit rating. "I always pay my bills on time," said George Whitehill of Redwood City, California, who uses *Quicken* and his IBM PC XT to organize his family's personal finances, as well as those of his electronics-distribution business. "My wife and I have an excellent credit rating."

SUIT YOUR SPECIAL NEEDS

Programs that manage checkbooks come in many shapes and forms. Some are part of sophisticated personal-finance packages that do everything from managing your investments to tying into electronic banking systems. For example, *Andrew Tobias' Managing Your Money* ($150–$220; MECA) is many powerful programs integrated into one. Its capabilities include budgeting, transaction tracking, insurance, real estate, stock management, tax estimation, and financial-analysis sec-

ANDREW TORRES *and* LISA WU *are* FAMILY & HOME-OFFICE COMPUTING*'s editorial coordinators.*

ILLUSTRATION BY MONA MARK

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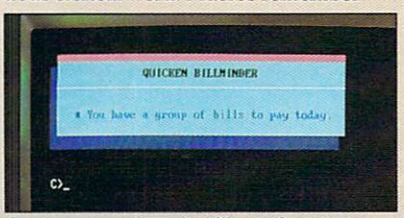

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your bills, print your checks, and update all records automatically. All you do is sign the checks.

In fact, Quicken is so automatic it reminds you when to pay bills even if you forget to use it! Simply turn on your hard disk PC, and Quicken's pop-up Billminder™ appears when you need to pay bills.

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☐ 5¼" disk ☐ 3½" disk
☐ Transfer to Lotus Utility (optional), $19.95

Intuit Code FC1187

tions, as well as check-writing.

Other programs, such as *Checks & Balances* and *Home Money Manager II* ($50; HomeCraft Computer Products) are budgeting-checking programs that will help you manage your checking account and establish a budget.

The third type is the stand-alone checkbook program. A couple of software packages that fall into this category are *Your Electronic Checkbook* ($10, Melody Hall Publishing/ValueTime Software) and *Quicken*. Some will do more than others. For example, *Quicken* will print checks and interface with spreadsheets. By taking a closer look at *Quicken*—available for the Apple II series, IBM PCs, PS/2s, and compatibles—we'll give you a better idea of how a full-featured computerized checkbook works.

PAYING YOUR BILLS

With screens that duplicate the familiar look of personal checks, *Quicken* lets you balance your checkbook as you would manually.

As you write out a check, *Quicken* enters the transaction on your check register, saving you the trouble of having to fill in the information twice. And once you've recorded the checks, you're ready to print them out onto special checks that are available from Intuit. (Order forms are enclosed in the software package.) *Quicken*'s checks, which are printed by the same companies that supply checks to most banks, look similar to ordinary checks, except that they're larger and come with pin-feed holes for your printer.

The advantages of *Quicken* are more evident when you examine the program's "memorize" and "recall" features. Data for frequently written checks, such as mortgage, insurance, and car-loan payments, can be "memorized" and called up each month. Just change the date and, if necessary, the amount.

CATEGORIZING YOUR EXPENDITURES

Filling in the memo line of your *Quicken* check is optional but may prove useful later on. Let's say you want to keep track of all your business-related expenses so that you can make the appropriate deductions at tax time. Or suppose you want to find out how much money you spent on gas, electricity, or rent last year. With its search-and-list feature, *Quicken* can find old checks and transactions a lot faster than you can leaf through a pile of canceled checks.

You can conduct searches by date, payee, memo, or any combination of these. For instance, maybe you need to find the rent check you wrote in March 1987 to Fred Zorch, your landlord. Since you've written nearly a dozen checks to Zorch, you must specify both "Zorch" and "March" in order to find the right check.

RECONCILING YOUR CHECKBOOK

However, you should be aware that deposits, handwritten checks, checking-account fees, cash-card withdrawals, and any interest earned must be recorded manually in the register to keep your account accurate. Get in the habit of saving *all* your bank deposit and withdrawal slips in one place until you have a chance to enter them into your computerized check register. (Also, enter the information regularly, even if it's only once or twice a month.) For example, Whitehill tosses all of his receipts into a basket next to his computer so that he remembers to enter the information into his check register. Everything you enter into the register is shown on the screen in the order in which you entered it, and you can review the list or print it out anytime you need to see a check, make a deposit, or check your balance.

If, for some reason, your records don't match your bank statement, *Quicken* will help you find the discrepancy. For example, let's say you have a balance deficit of $53. You have two options. You can either accept the bank's statement as correct, or you can try to find the mistake. Maybe you didn't mark some checks that have cleared or maybe you incorrectly entered a dollar amount.

And if you'd like to transfer data from your check register into a spreadsheet such as Lotus *1-2-3* or *AppleWorks* for further manipulation, *Quicken* will guide you through the process. Once you've transferred the information, you can perform any spreadsheet calculations.

In short, managing your checkbook with your computer can turn poor personal financial habits into good ones. If you're the kind of person who tosses aside unopened bank statements, bounces checks, and keeps incomplete check registers, computerizing your checkbook could save you money and aggravation, as long as you're willing to commit yourself to the task. As Galland admitted, "It's so easy to write checks now that paying bills is kind of fun."

The recently introduced Quicken Version 2 *($50), for the IBM PC, PS/2, and compatibles, can assemble financial, budget, income, and expense reports and update financial records. A special Billminder feature tracks bills and reminds you whom to pay and when.* ■

GETTING THE MOST OUT OF CHECK-WRITING SOFTWARE

We asked a number of people how they maximize managing their checkbooks via computer. Here are some of the tips they gave us:

1. Always make backups of your data disks. Otherwise, you risk losing all your financial records.

2. Remember to record all checks that you write manually, as well as deposits, automatic teller machine (ATM) withdrawals, and bank service charges. The program can't reconcile your account if outstanding items aren't recorded in the check register.

3. Finish reconciling one statement before beginning another. If you have to balance more than one statement, do the oldest one first.

4. Use your program's memorize feature (if there is one) to store check information—names and addresses, for instance—that you use on a regular basis.

5. Sit down at the computer once or twice a month to pay your bills and examine your check register.

6. Do you want to categorize expenses for tax purposes? Type BUSINESS or D (for deductible) or some other designation onto the memo line.

7. If you don't want your check recipient to see the memo but feel it's important to have it in your records, first save and print the check and then add the memo.

8. Schedule payments to avoid missing due dates. You may want to use a date book or calendar to note when checks are due. (As mentioned earlier, if you have an IBM or compatible with a hard-disk drive, *Quicken* will automatically alert you to payment due dates.)

COMPANY PHONE NUMBERS

CDE Software (213) 661-2031; HomeCraft Computer Products (503) 692-3732; Intuit (415) 322-0573; MECA (203) 226-2425; Softquest (703) 281-1621; ValueTime Software (312) 948-9207.

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CIRCLE READER SERVICE 59

TELECOMPUTING

A GUIDE TO 2400-BAUD MODEMS
As Use Spreads, High-Speed Modems Gain Appeal

BY RIC MANNING

Two years ago, a 2400-baud modem seemed like an exotic device suited mostly for high-powered business computer users. Skeptics said high-speed data transfer would be slow to catch on because in order to work, both ends of the connection needed compatible hardware. And in 1985, hardly any information services supported 2400-baud access.

But today, the faster communication speed is rapidly becoming the communication standard. Sales of 2400-baud modems have more than doubled each year since 1985, according to Dataquest, a San Jose market-research firm. After selling about 45,000 units in 1985, manufacturers expect to sell about 200,000 this year—about 20 percent of all modems sold.

A fast modem has the same appeal as a fast car: compared to a 1200-baud modem, a 2400-baud modem theoretically can go twice as far in the same amount of time or arrive at its destination twice as fast. On the average, a 2400-baud modem should transmit the equivalent of a double-spaced typewritten page in about six seconds.

For people who pay by the minute for telephone service and for the time spent on information networks, the increased speed of the 2400-baud modem can mean significant savings. But before you figure on cutting your phone bills in half, keep a couple of things in mind.

TWO REMINDERS

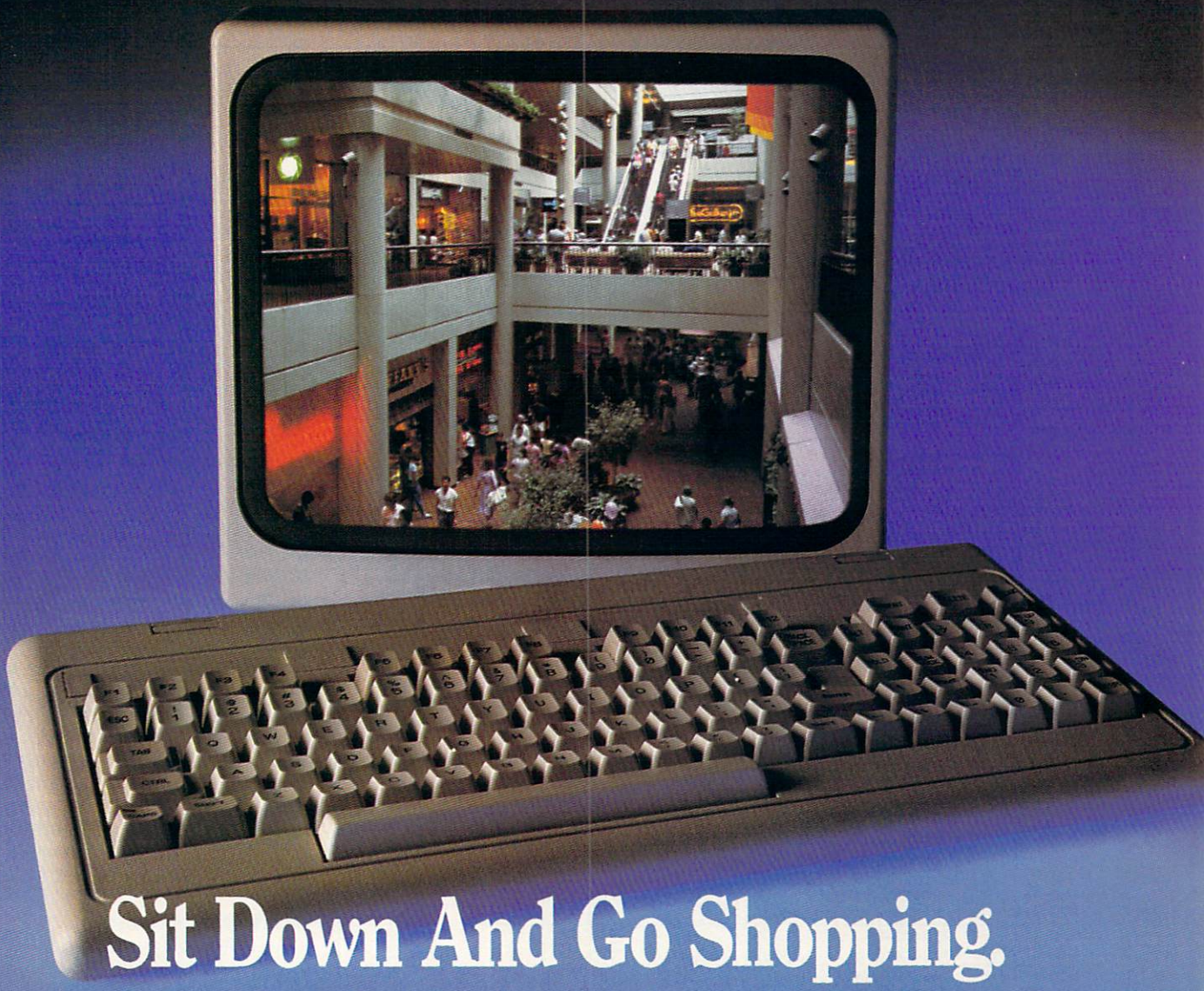
For one, remember that downloading files from a network—which is where the transmission speed really makes a difference—is probably just part of what you do on-line. Much of the time, people who go on-line are interacting with the host computer—sending messages and waiting for responses. That's what happens when you log on, check for mail, read conference postings and stock quotes, or chat with another user. Unless you're a terrific speed reader and can type like lightning, a 2400-baud modem won't cut the price of those activities.

In fact, some subscription services charge more for 2400-baud access than 1200-baud access, so it could cost *more* to communicate at the higher speed. The Source, for example, charges 11 percent more for 2400-baud access during nonprime hours. However, CompuServe has dropped its surcharge for high-speed users, and other networks also are moving in that direction.

Another thing to remember is that many time-sharing services, including Telenet and Tymnet, don't support 2400-baud access in all areas. (Telenet and Tymnet are systems that link you to information networks, such as CompuServe.) Telenet, for example, has nearly 400 access centers across the country, but only about 130 of them are equipped for 2400-baud communication. Fifteen states don't provide any 2400-baud access to the Telenet network. Even CompuServe, the largest network, doesn't offer 2400-baud access all over the country.

The modems pictured here are (clockwise, top): Novation Professional 2400, Hayes Smartmodem 2400, Prometheus ProModem 2400, Okidata Okitel 2400, and Ven-Tel 2400 Plus.

RIC MANNING, *a computer writer for the* Louisville Courier-Journal *and editor of* Bulletin Board Systems *newsletter, wrote "The Remote-Controlled Computer" in the August issue. He receives electronic mail on The Source (STQ007) and CompuServe (72715,210).*



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CIRCLE READER SERVICE 7

2400-BAUD MODEMS FROM MAJOR MANUFACTURERS

Manufacturer	Model	Price	Mounting	CCITT V.22 bis	Software Included	Asyn/ Syn
Anchor Automation (818) 998-6100	Signalman Lightning 24	$499	E	Y	N	A/S
	Signalman Lightning F/i	$399	I	Y	Y	A/S
AT&T (800) 247-1212	AT&T Dataphone II Modem 4024	$475	E	Y	N	A/S
Bizcomp Corp. (408) 733-7800	IntelliModem 2400	$599	E	Y	N	A/S
Cermetek Inc. (408) 752-5000	Cermetek 2400	$545	E	Y	N	A
	Cermetek 2400 SPC	$445	I[1]	Y	Y	A
Everex Systems (415) 498-1111	Evercom 24	$289	I[1]	Y	Y	A
	Evercom 24E	$499	E	Y	Y	A
Hayes Microcomputer Products (404) 449-8791	Smartmodem 2400	$599[2]	E	Y	N	A/S
	Smartmodem 2400B	$549	I	Y	N[3]	A/S
	V-series Smartmodem 2400	$899[2]	E	Y	N	A/S
	V-series Smartmodem 2400B	$849	I	Y	N[3]	A/S
Leading Edge (617) 828-8150	Model L 2400B	$289	I[1]	Y	Y	A
Multi-Tech (612) 631-3550	MultiModem 224	$599	E	Y	N	A/S
Novation Inc. (818) 998-5060	Professional	$750	E	Y	Y	A/S
	2400	$595	I[1]	Y	Y	A
Okidata (609) 235-2600	Okitel 2400	$549	E	Y	Y	A/S
	Okitel 2400B	$499	I	Y	Y	A/S
Prentice Corp. (408) 734-9810	Popcom C200	$595	I[1]	Y	N	A
Prometheus (415) 490-2370	ProModem 2400	$499	E	Y	N	A/S
	ProModem 2400G	$399	E	Y	N	A/S
Racal-Vadic (408) 432-8008	Maxwell 2400VP	$595	E	Y	N	A/S
US Robotics (312) 982-5001	Sportster 2400 PC	$279	I	Y	Y	A
	Sportster 2400	$299	E	Y	N	A
Ven-Tel Inc. (408) 436-7400	2400 Plus EC2400-32	$599	E	Y	N	A/S
Zoom Telephonics (617) 423-1072	Zoom Modem PC 2400 XL	$399	I	Y	Y	A

KEY: I Internal mounting (IBM PC and compatibles); E External stand-alone; A Asynchronous transmission; A/S Supports asynchronous and synchronous transmissions; Prices are manufacturer's suggested retail.
[1]Half-size cards.
[2]The V-series attachment ($349) almost doubles the rate of transmission.
[3]*Smartcom* software is $50.

HOW TO READ THE CHART

The chart above lists popular 2400-baud modems from major manufacturers. All are Hayes compatible, according to the manufacturers. Most are stand-alone models that can be attached to any computer through a standard RS-232 serial port. The internal models are slot-mounted versions for the IBM PC and compatibles.

CCITT V.22 bis is an internationally recognized standard for 2400-baud modem-to-modem communications. Some information networks in the U.S. (such as CompuServe) adhere to the CCITT V.22 bis standard. In addition, most modems support CCITT V.22 at a transmission rate of 1200 baud.

In addition, you may have to upgrade your software if you move to a higher transfer speed. Some users have experienced delays using the XModem file-transfer protocol with their 2400-baud modems. The problem, says Gene Plantz, operator of a bulletin board system in suburban Chicago, is that a few 2400-baud modems come with their own error-correcting circuit. With both modem and software checking for errors, the effective transfer speed goes down.

The reason for special error-checking circuits, of course, is that higher speeds put more demands on standard telephone lines. Thus, some 2400-baud modems may have to adjust to lower speeds on poor long-distance connections. Almost all modems back down automatically (to 1200 baud or lower) if they can't establish a good connection at 2400 baud. (This often presents a new problem—yet to be fully solved by developers—because the software rarely recognizes or adjusts to the lower speed.) Nonetheless, there are fewer transmission errors with 2400-baud modems than skeptics expected when they were introduced.

FINAL REMINDERS

One issue to consider, depending on your needs, is whether the modem is capable of both asynchronous and synchronous communication. The former—which is slower—is the standard for computer-to-computer conversations and bulletin board access. But you might need synchronous capability—which is faster—to connect to a mainframe.

Compatibility with the Hayes command set is widely accepted (all the modems in the accompanying chart are "Hayes compatible," according to the manufacturers), but not every manufacturer supports every one of the Hayes commands. Check the specifications if your modem has to emulate a Hayes modem exactly.

Don't worry that 2400-baud modems will be left in the dust by even faster modems anytime soon, even though companies are promoting models that transfer data at 9600 baud. Unlike the international standards that govern most 300-baud, 1200-baud, and 2400-baud communications, there's no widely-accepted standard for super-fast modems, so models from different manufacturers can't talk to each other.■

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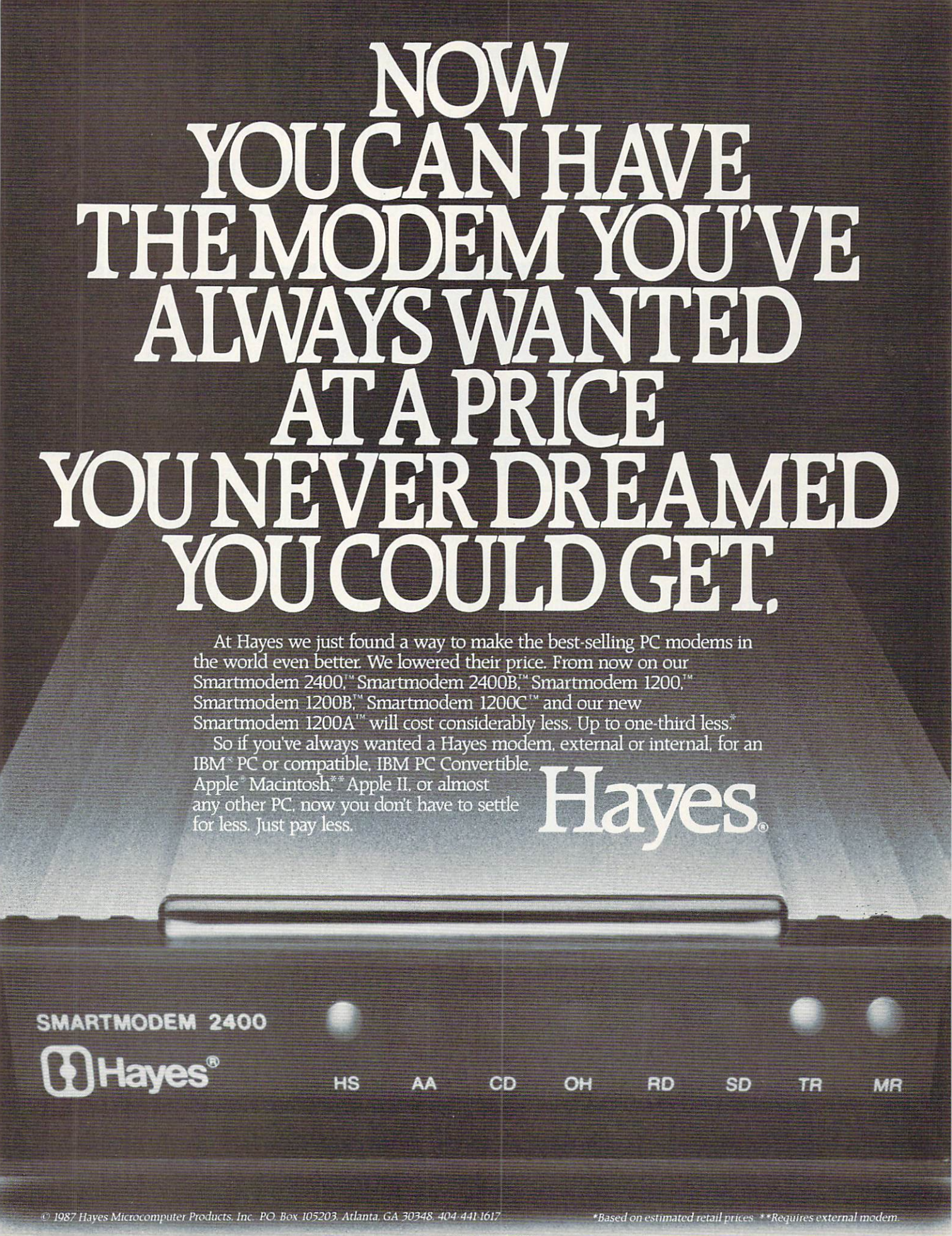

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*Based on estimated retail prices. **Requires external modem.

CIRCLE READER SERVICE 20

HOME-SCHOOL CONNECTION

IBM DOESN'T ALWAYS MEAN BUSINESS: PART I
There Are Plenty of Good Education Programs for Families with IBM PCs, PS/2s, and Compatibles

BY TONY MORRIS

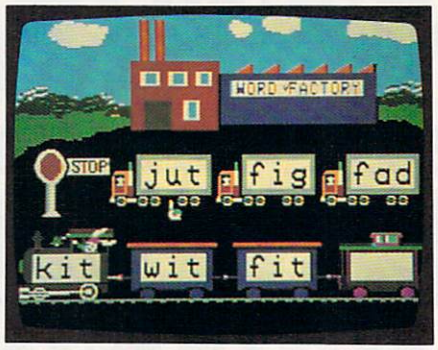
Not too long ago, if you were shopping for a computer that your kids could use for learning, most salespeople would have recommended an Apple IIe. They probably would have walked you right past their display of MS-DOS computers muttering "business machines."

Not any more. Now that so many people are using IBM PCs and compatibles to manage household finances, finish office work at home, and set up home-based businesses, personal computers have become downright personal.

People of all ages have transformed IBM PCs—and the flock of compatibles that have followed—into work, play, and learning tools. Everyone in the family—from a mother who's running a desktop-publishing business to a toddler who's learning to recite the alphabet—has uses for these computers. Indeed, many of the best education programs, traditionally available only for Apple computers, run on IBM PCs, the newer Personal System/2, and IBM-compatible computers. As long as you have color-graphics capability and a color monitor, you have a large selection of truly outstanding learning packages. In this two-part series, we're going to take a look at programs available for IBM computers that FAMILY & HOME-OFFICE COMPUTING reviewers can recommend wholeheartedly. This month, we'll tell you about language arts and math programs.

READING

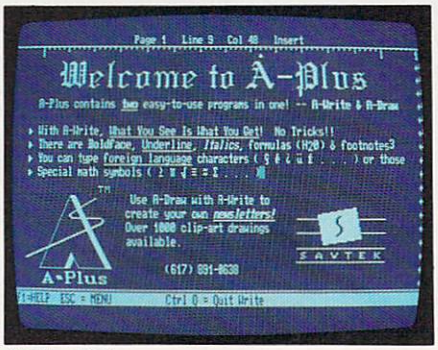
Reader Rabbit.* Nine games help build children's early reading skills, including letter and word recognition, memory skills, vocabulary, spelling, and concentration. Recommended for ages 4–7. ($40, 256K. The Learning Company, 6493 Kaiser Drive, Fremont, CA 94536; [800] 852-2255. Also available for 64K Apple, Apple IIGS.)



Reader Rabbit

WRITING

A-PLUS ETG.* A word processor tailored for high school and college students. Includes a graphics program that lets users insert graphs, charts, and other graphics into documents. ($90, 256K. Savtek Corporation, P.O. Box 1077, Waltham, MA 02254; [617] 891-0638.)



A-Plus ETG

Bank Street Writer Plus.* A word processor designed for ease of use; can be used by both adults and children. ($100. Broderbund, 17 Paul Drive, San Rafael, CA 94903; [415] 492-3200. Also for 128K Apple.)

Homework Helper Writing.* By asking questions, this interactive program helps students generate ideas, organize ideas into outlines, and write papers using a built-in word processor and spelling checker. For preteens. ($50. Spinnaker Software, One Kendall Square, Cambridge, MA 02139; [617] 494-1200. Also for 128K Apple, C 64/128.)

Homeworker.* An integrated word processor, outliner, flash-card maker, grade keeper, and more that helps high schoolers organize and complete homework assignments. ($90, 256K. Davidson & Associates, 3135 Kashiwa Blvd., Torrance, CA 90505; [213] 534-4070. Also available for 128K Apple.)

Term Paper Writer. Adds a layer of structure to your children's writing. Helps students organize ideas, draw outlines, make notes, write drafts, and add footnotes and bibliographies. ($50, 256K. Personal Choice/Activision, 2350 Bayshore Parkway, Mountain View, CA 94043; [415] 960-0410. Also available for 128K Apple, C 128.)

Writer's Helper.* More than 20 modules provide help with finding a topic to write about, coming up with creative things to say, organizing thoughts, putting them in writing, and then evaluating the resulting paper for common errors. Ages 12 and up. ($120, 192K. Conduit, The University of Iowa, Oakdale Campus, Iowa City, IA 52242; [319] 335-4100. Also available for 64K Apple.)

SPELLING

Sea Speller. Race-the-clock underwater adventure that teaches spelling and reading skills. Ages 7–10. ($10. Fisher-Price/Spinnaker, One Kendall Square, Cambridge, MA 02238; [617] 494-1200. Also available for Apple and C 64/128.)

Spell It! Children can practice spelling 1,000 commonly misspelled words or words of their own choosing. Can buy data disks that adjust spelling level. Ages 10 and above. ($50. Davidson & Associates, see address and phone number above. Also for Apple, Atari 800/XL/XE, C 64/128.)

TONY MORRIS, *a contributing editor for* FAMILY & HOME-OFFICE COMPUTING, *wrote "Planning the Future" for the June Home-School Connection department.*

** Indicates that the program is also available for the IBM Personal System/2, IBM Convertible, Tandy 1000 HX and TX, Zenith Eazy PC, and any other IBM-compatible computer that uses 3.5-inch drives.*

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DesignWare's entertaining software grows with your children — to keep learning alive. Juanita improves word recognition and spelling with ***Spellicopter***,® a fast-paced helicopter rescue game (for ages 6–10). And she learns to think fast as she masters arithmetic facts with ***Math Maze***® (for ages 6–11).

Give teens a homework advantage.

Skip starts out as cub reporter and works his way up to editor-in-chief in the fun-filled ***Grammar Examiner***.™ And he becomes as knowledgeable as a seasoned U.S. traveler with ***States & Traits***.™ (Both programs are from **DesignWare** and both are for ages 10 & up.)

EduWare's *Algebra Series* offers Bill a serious — and very effective — tutorial approach to high school algebra. He'll start with ***Algebra I*** and work his way through the entire series.

Let the whole family get down to business

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FC 11

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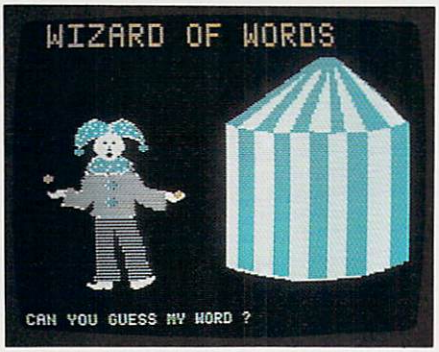

Wizard of Words

VOCABULARY

Word Attack.* Uses quizzes and an exciting arcade-type game to help preteens build their vocabulary and learn factual information (such as historical dates, names, state capitals, and minerals). French, German, and Spanish versions are available. ($50, 256K. Gessler Educational Software, 900 Broadway, New York, NY 10003; [212] 673-3113. Also available for Apple, C 64/128.)

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The Grammar Examiner.* Provides the excitement of a board-type game with practice in writing and editing skills (such as identifying errors in grammar, punctuation, and capitalization). For youngsters ages 10 and above who need a little extra motivation. ($40. Britannica Software, P.O. Box 77186, San Francisco, CA 94107; [415] 546-1866. Also available for Apple, C 64/128.)

Grammar Gremlins.* Preteens can practice the parts of speech, sentence structure, correct punctuation, subject-verb agreement, and more. ($50. Davidson & Associates, see address and phone number above. Also available for 64K Apple.)

Writing (Volumes 1–5). Provides a thorough tutorial and exercises for recognizing proper forms for contractions, correct punctuation, complete sentences, and subject-verb agreement. Ages 12 and above. ($40 each. Britannica Software, see address and phone number above. Also available for Apple.)

Writer Rabbit.* Children, ages 7–10, can play six games that will help them learn to identify nouns, verbs, and other words and phrases with this inviting drill-and-practice, tutorial, and problem-solving program. ($50, 256K. The Learning Company, see address and phone number above. Also available for 64K Apple.)

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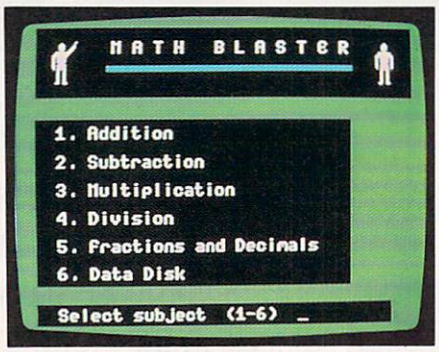
Alge-Blaster.* Supplements classroom work by providing algebra instruction and practice. ($50. Davidson & Associates, see address and phone number above. Also available for 64K Apple, C 64/128.)

Math Rabbit.* These 12 games teach early math skills, including counting, addition, and subtraction. Also includes drill and problem-solving sessions. ($40. The Learning Company, see address and phone number above. Also available for 64K Apple.)

Math Blaster Plus.* Students practice addition, subtraction, multiplication, division, fractions, decimals, and percents. Can record results and print certificates of excellence. ($50, 256K. Davidson & Associates, see address and phone number above. Also available for 128K Apple.)



Math Blaster Plus

Math Shop.* Children solve math problems as they help proprietors serve customers in ten stores ($40, 256K. Scholastic Inc., 730 Broadway, New York, NY 10003; [212] 505-3000. Also available for 64K Apple.) ■

Sylvan Learning Centers

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For the center nearest you, consult your White Pages or Directory Assistance or call Sylvan Learning Corporation, 2400 Presidents Dr., Montgomery, AL 36116, (205) 277-7720.

What to do when your child comes home with poor grades.

PRACTICAL TIPS FROM SYLVAN ON RESPONDING TO POOR SCHOOL PERFORMANCE.

Poor grades can be disappointing to parent and child alike. But viewed as important signals, they can prompt action which may actually improve your child's learning skills for life. Here's what Sylvan advisors have to say.

Dr. Ted Bell, former U.S. Secretary of Education: "The problem may be physical or emotional, but in most cases, it goes back to a previous lesson–usually a basic math or reading skill–that wasn't fully understood. This can be turned around with the right kind of help. Ask your child's teacher."

Dr. Vincent E. Reed, former U.S. Asst. Sec. for Elementary and Secondary Education: "Poor grades will lower any child's self-esteem. If you show disappointment, make sure your child understands it's out of concern for his education–not out of disappointment in him as a person."

Dr. Glenn Hogen, V.P., Education, Sylvan Learning Corporation: "You may not realize it at the time, but when you help your child with his studies–by giving a hand with homework, rewarding extra effort, or providing outside assistance–you're making him feel loved enough to succeed."

How Sylvan Learning Centers can help.

Sylvan is a national network of private educational centers specializing in basic reading and math skills. If your child is having a problem at school, we can help.

Sylvan Advisory Board members Dr. Glenn Hogen, V.P. of Education, Sylvan Learning Corporation; Dr. Ted Bell, Former U.S. Secretary of Education; Dr. Vincent E. Reed, Former U.S. Asst. Sec. for Elementary and Secondary Education.

We'll begin with diagnostic tests to pinpoint exactly where, in the normal sequence of reading and math lessons, your child began to have problems. (A fourth grade child, for example, may be having problems with multiplication tables, which are usually taught in third grade.)

> "in most cases, it goes back to a previous lesson...that wasn't fully understood."

Then, instead of beginning your child's instruction at that point, or even at the next level, we'll actually back up a step. That way, your child will experience success–and confidence–right from the start.

Individualized instruction, personal attention.

Your child will be given an individualized learning program designed to accommodate his own personal needs. His Sylvan teacher will work closely with him every step of the way. With plenty of warm support and encouragement, and state-of-the-art materials, your child's learning skills–and self-esteem–will improve dramatically.

Our approach works. So much so that we can actually guarantee results.

The Sylvan Guarantee

When enrolled in our basic reading or math program, your child will improve at least one full grade equivalent score after 36 hours of instruction, or we will continue up to 12 additional hours of instruction, at no further cost.

Measurement will be based on a nationally recognized achievement test for improvement in either reading (comprehension or vocabulary) or math (computation or application).

Call today for more information.

Help improve your child's learning skills for life. For a free consultation, or for more information, call the nearest Sylvan Learning Center today.

Sylvan Learning Centers®

We help children master the basics of learning.

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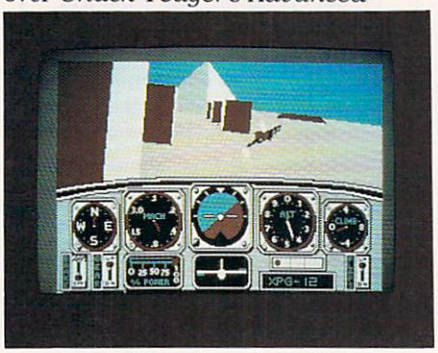
ENTERTAINMENT
HINTS, NEWS, AND NEW GAME FORMATS

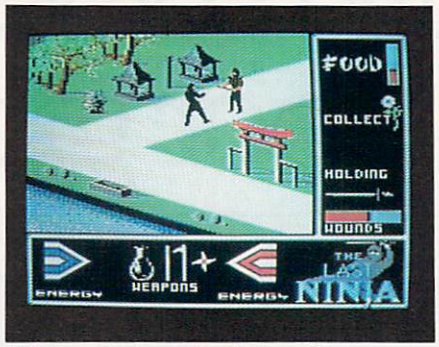
WHAT'S NEW, AND WHAT'S RUMORED?

★ **John Madden** hates airplanes. Whenever the former coach of the **Oakland Raiders** took his team on the road, he would hop on a train and send his team by plane. (Madden even appears on a train in a Miller Light beer commercial.) So it's no surprise that when he agreed to work on a football program for **Electronic Arts**, company president **Trip Hawkins** and the football whiz mapped out the game while traveling by train from Madden's Denver home to EA headquarters in San Mateo, California. On a recent visit to EA, we got a sneak preview of *John Madden Football*. It's amazing. The game is expected out soon for the **Apple** . . . . There are many people who, like Madden, would prefer to stay on the ground than be 40,000 feet up. But on the ground, **IBM** owners have been going bonkers over *Chuck Yeager's Advanced Flight Trainer*. (**Chuck Yeager** is the Air Force Brigadier General who shattered the sound barrier 40 years ago.) EA shipped 30,000 copies in the first month of its release; the figure is expected to soar to 100,000 by Christmas. It's fast becoming the best-selling MS-DOS game on the market. Who says IBM owners don't play games? . . . For gamers interested in the secret level of EA's *Marble Madness*: It's not a special edition. You just have to work your way deep into the game before you find it.



Strap yourself into the cockpit of *Chuck Yeager's Advanced Flight Trainer*.

★ Look for **Microsphere** titles under the company's new name, **Paragon Software**. Paragon's newest release is *Master Ninja: Shadow Warrior of Death*, a $35 martial arts action/adventure game for the **IBM PC/PC*jr***.



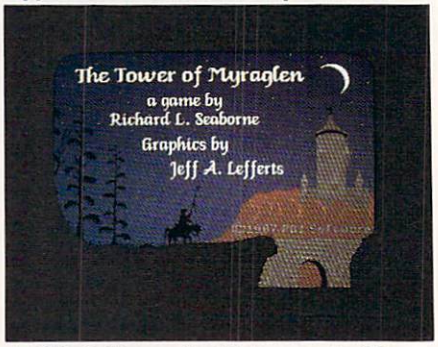
Kill the evil shogun in *The Last Ninja*.

★ Speaking of ninjas, **Activision** has released *The Last Ninja*, which is based on an ancient Japanese legend. Armed with martial-arts skills and weapons (such as nunchakus, spears, swords, and throwing stars), you must recover the sacred scrolls and kill the evil shogun. Your journey takes you through six levels of difficulty, and there's even an original soundtrack. *The Last Ninja* costs $35 and is available now for the **C 64/128**. **Apple** and **IBM PC/PC*jr*** versions will follow early next year. . . . Activision has added more classic titles to its line of **Solid Gold Software**. (This line features rereleases of popular games at lower prices.) *Hacker* costs $15 for the **Apple**, **C 64/128**, and **IBM PC/PC*jr*** and $25 for the **Macintosh**. For $15, **Apple**, **Atari 800/XL/XE**, and **C 64/128** owners can buy *Ghostbusters*. **Apple** and **C 64/128** versions of *Little Computer People* cost $15. *The Great American Cross-Country Road Race* is $15 for the **Apple**, **Atari 800/XL/XE**, and **C 64/128**. And last but not least, two titles, *Pitfall* and *Demon Attack*, were released as a $15 flippy (a flippable floppy) for the **Atari 800/XL/XE** and **C 64/128**. Also, *Star League Baseball* and *On-Field Football* can be bought as a **C 64/128** flippy for $15.

★ An agreement was successfully negotiated between the worlds of film and software. **Lucasfilm Games**, a division of **Lucasfilm Ltd.**, is publishing *Maniac Mansion*, which is to be distributed by **Activision**. Stalk through a 55-room mansion as you try to rescue a friend being held captive by a bizarre family. A beautiful girl disappears and a mad doctor schemes to take over the world—among stranger things. *Maniac Mansion* is available now for **Apple** and **C 64/128** owners for $35.

★ You're behind the wheel of a 2,500-horsepower race car, revving it up and readying to pop the clutch. Red turns to green, and you tear down the quarter-mile track heading to the finish line. You've entered the world of drag racing with *Top Fuel Eliminator*, **Gamestar**'s newest sports simulation. The game is available for the **Apple** and **C 64/128** for $30.

★ You might remember the first computer game from **Sierra On-Line**, *Mystery House*, a haunted-house murder mystery in black and white with stick-figure characters. Pretty primitive stuff. To celebrate its seventh birthday, Sierra On-Line is releasing *Mystery House* for **Apple** owners into the public domain. As far as we know, this is a first for any software publisher. For the small sum of five dollars—to cover postage and handling—you can buy a copy and even make copies for your friends and family. Send your check to Sierra On-Line, P.O. Box 485, Coarsegold, CA 93614. . . . The best-selling arcade game in Japan, *Thexder*, has made its way to software shelves in America. The object is to transform the character from robot to plane, winding your path through mazes in order to locate and blow up the control center. It's available from Sierra On-Line for the **Apple IIGS** and **IBM PC/PC*jr*** and is $35.



★ **PBI Software** knights you in *The Tower of Myraglen*, and you battle the forces of evil to save the King-

This is the difference between reading an adventure and living one.

Picture the most exciting text-only Adventure in your software collection—WITH PICTURES!

GUILD OF THIEVES is the long-awaited sequel to THE PAWN, which came sizzling onto the software scene to awards and accolades. Both are available now from Firebird.

These stunning Adventures, completely different from any game you've ever played, seduce the sight with their breathtaking illustrations and engage the intellect with a truly revolutionary text-handling system. The most sophisticated parser on the market lets you input complicated sentences and interact with a whole cast of fascinating characters in the mythical kingdom of Kerovnia.

GUILD OF THIEVES and PAWN, Computer Entertainment Adventure of the Year, come to you from Firebird, publishers of world-famous leading edge games under the Rainbird label.

You'll find the Firebird logo on other addictive Adventures too, as well as on absorbing Strategies, realistic Simulations, and fast-paced action Arcade games.

Firebird brings the best in entertainment software to those who enjoy a whole range of interactive excitement. We'll prove to you that you don't have to keep switching brands to satisfy your obsession for challenge!

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Available for C-64, Amiga, Atari 520ST, Atari 800/130, MacIntosh, IBM and compatibles. A "text-only" version is available for Apple II computers at $39.95.

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CIRCLE READER SERVICE 18

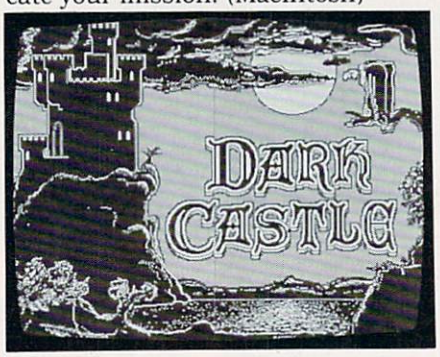
dom of Myraglen. Intricate traps, wizards, riddles, monsters, and secret passages—all the ingredients of a medieval quest—have been added along with graphics and sound that take advantage of the stretch capabilities of the **Apple IIGS**. *The Tower of Myraglen* is available now for the **Apple IIGS** and costs $55.

★ Three new releases from **Mindscape** are out, all priced at $30. **C 64/128** owners can defend feisty old ladies in the dangerous urban jungle of *Bop'N Rumble*. Chalk up, **Atari ST** owners, and play 3-D billiards inside the cube of *Q-Ball*. *Plutos* is a space shoot-'em-up arcade game, also for the **Atari ST**, that puts you in command of a spaceship. Your mission: Destroy the mothership's defenses.

—LISA WU

GAME HINTS

DARK CASTLE (Silicon Beach Software). Run, jump, duck, and fight your way through a multilevel castle in an attempt to dethrone the evil Black Knight. Before you can attempt this, you must recover and utilize the magical Shield and Fireball, or you will never succeed. Rats, bats, vultures, dragons, magic brooms, and traps further complicate your mission. (Macintosh)



★ When you first start playing the game, pick one of the mystery doors. If you end up in the Trouble section, quit and restart the game. Since the Trouble levels are not necessary for completion of the game, you should only go through them if forced (falling into a pit, for instance). If you find yourself in the Fireball section, back out into the Main Hall and proceed to the Shield levels. This will allow you to attain the Shield, and then you'll know exactly where to go to get the Fireball.

★ Always complete the Shield section first, then the Fireball section; the Shield is more useful when obtaining the Fireball, than the Fireball is when obtaining the Shield.

★ Shield One: Move across the first and second floors taking running jumps, as this is faster than just running. Stop three-quarters of the way across the second floor and kill the mutants on the third floor. Wait for the first boulder to go by the top of the ladder before climbing up. Run across the third floor and wait for the right moment to climb to the fourth and fifth levels. (Running jumps are faster than boulders, and you may catch up with one.)

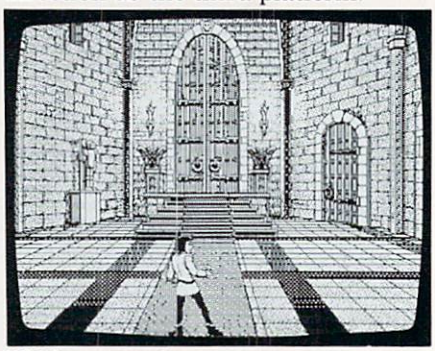
★ Shield Two: Before you start moving, kill at least half the vultures. Run to the other side of the screen, avoiding the pit that leads to Trouble Three, and stop. Kill any nearby vultures before climbing the stairs. When there are no vultures nearby, stand at the base of the ladder and wait for the dragon to breathe. As soon as it stops, climb the ladder and run to the right; you will be able to get through the door before the dragon comes out again. Although dumping water on the dragon will work also, this is a faster, safer method.

★ Shield Three: Kill the bats before jumping onto the first rope. When you move to another rope, make sure you turn yourself so that you're ready to grab the next one quickly.

★ Shield Four: Pull the lever to determine which ledges are real and which are illusions. Once you've climbed up the ledges, wait until the clouds have reached the left side of the screen and are starting to move to the right before climbing to the top level. When the clouds turn around again, wait until both have shot lightning bolts, then run past them. Grab the Shield and wait until the clouds start approaching you. Use the Shield when a cloud is close by. This will protect you from the bolt and teleport you back to the Main Hall with the Shield's powers.

★ Fireball One: Kill at least half of the vultures, if not all, before moving. Move halfway across the screen and then kill any mutants on the ground. From there, go to the ropes and climb up when the coast is clear.

★ Fireball Two: Once you've killed the bats, jump onto the first approaching platform when it's about one inch away. In the same way, jump to the second platform. Move to the right side of this platform and wait until you're moving in the same direction as the third platform.



Which mystery door will you open?

When the third platform passes over land and your platform starts to move in the other direction, jump. When you recover from the fall, move to the left side and wait until the small platform to the left of you starts to move away, then jump. Before going to the next platform, you'll have to wait awhile before you can jump. Wait on the left side of your platform, and when the timer reaches 660–670, you can jump safely. To reach the last platform, wait until it moves underneath you and then starts to move away before jumping. That's about 340 on the timer.

★ Fireball Three: Jump onto the first raft when it's about one inch away from you. Use the Shield if any boulders come at you. Don't kill the mutant until you are more than halfway across the lower level. Go to the right side of the log and wait until the last possible moment before the raft goes down the waterfall.

★ Fireball Four: Immediately go down the stairs and take a few steps to your right. When the broom gets close to you, use the Shield until it has passed through you. Be careful; it can kill you sooner than you might think. Whatever you do, don't hit the broom. It will simply split into two brooms. Run to the right side of the screen, hit the floating eye, and then jump onto the rope. Climb to the top of the rope before dropping off or you will fall into Trouble Three. Before you jump to any ledge, hit the eye. When you

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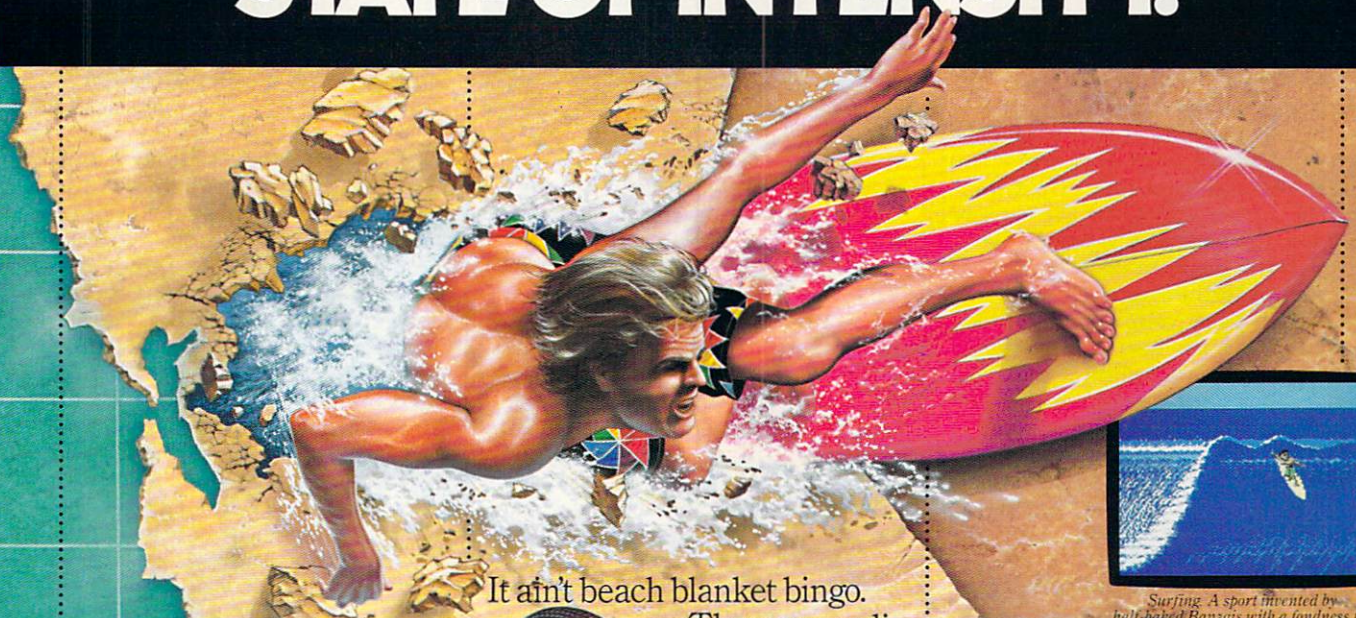

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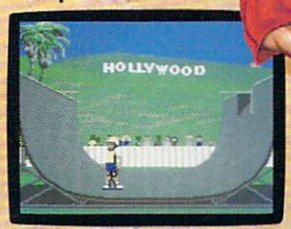
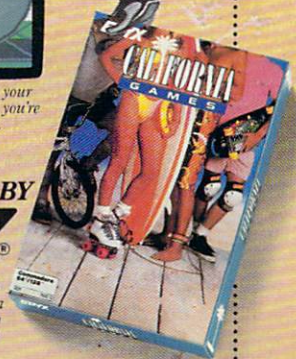


Launch a few feet off-the-lip with your skateboard tucked high. And while you're up there, dance for the crowd.

Slalom the boardwalk obstacle course on roller skates.



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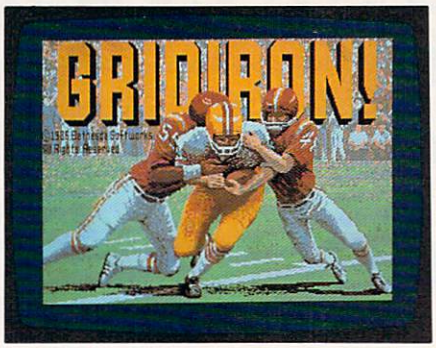
reach the three chains, hit the eye again. Pull the first chain, then the second, and then the third. If this doesn't open the magic wall, try another combination. Make sure you hit the eye after each try. When you open the magic wall, jump across the hole and stand in the depression; you will receive the Fireball.

★ Black Knight One: Jump onto the closest rope and work your way to the ledge on the upper left of the screen. Place your arm at a 45-degree angle so that the apexes of your Fireballs' arcs pass just under the top of the screen. When the Gargoyle comes, throw Fireballs with your arm in the position described above. To complete the rest of the screen, you must work your way from one safe ledge to the next, waiting for the Gargoyle and killing it at each ledge. Shoot the guards whenever you have to move past them, lest they shoot you first while you are climbing ropes. —DAMON OSGOOD *and* DAVID LANGENDOEN *New York, New York*



GRIDIRON! (Bethesda Softworks/Electronic Arts). One to two players control offensive and defensive squads of their favorite teams, calling the plays and then controlling key players to see their plans being accomplished. (Amiga)

★ Practice, practice, practice! The only way to win this game, against either another player or the computer, is to perfect your moves, learn the plays, and then polish them until they become second nature. None of this "look-at-the-player-card" stuff. If you want to gain lots of yardage, get your timing right on those long passes. If short gains are needed, make sure the ball carrier is going to the right place.

★ Design your own plays. It'll drive the computer crazy! The program has been set up to combat preset plays of certain types. If you can design your own plays using strategies the computer will have to figure out, you may have discovered the key to success. The plays will work against humans if the computer can be outfoxed, too. Draw the plays on paper, try to solve them mentally, and if you think they'll work, go for it. —JAMES DELSON

OGRE (Origin Systems/Broderbund). This strategy game is adapted from a board game of the same name. In the next century, warfare has become a nightmare worse than anyone ever could have imagined. Fighting takes place on nuclear battlefields where warriors—using such high-tech weapons as sophisticated tanks, rocket launchers, ground-hugging Hovercrafts, and artillery pieces—face their ultimate enemy, a massive weapons platform known as OGRE. This super tank—nuclear-powered, heavily armored, and capable of destroying entire armies—is trying to obliterate human-operated command posts. This game

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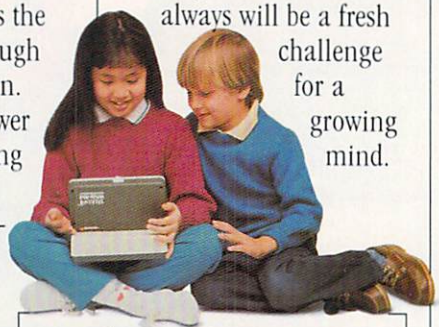

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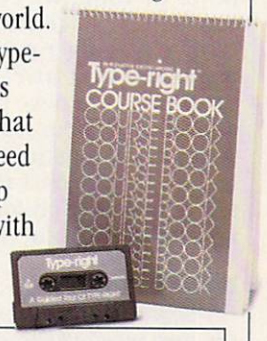

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pits one to two players against each other or lets a solo player (playing either the OGRE or an army) determine the future. (Apple, C 64/128)

★ The best vehicles at the defender's disposal are the GEVs, which can sting the OGRE without being confined to its main and secondary armaments. (Don't worry about the missiles.) In order to learn the potential uses of the free-ranging Hovercraft—which can move twice each turn—play several games against yourself. Practice "stinging" and retreating out of range, remembering that while the OGRE can move only three hexes, its armament can cripple or kill your vehicles from up to five hexes away.

★ As the OGRE, don't waste your missiles! If you use them too early against unworthy targets (GEVs and missile launchers), you won't have them at your disposal when you really need them against the howitzers. And *always* save a missile for the command post. Even without your treads, you can still attack the command post from five hexes away.

★ As the OGRE, don't bother wasting your time and treads on the puny units that stand in your path. Go around them. You can always go back and stomp them, but your goal is to obliterate the command post; so don't sidestep unless it's part of your plan.

★ For both gamers, play balance can be achieved in various ways. Our favorite is to alter the initial ground setup, allowing the defender to establish a specific number of obstacles to help block the OGRE's path.

Try building a maze of craters or a wall with only one place to escape through. Then use as many howitzers as you can to knock out the OGRE's treads before you close in to finish it off with some GEVs.

—JAMES DELSON

NEW CONVERSIONS

Amnesia (Electronic Arts). Now available for C 64/128. Already available for Apple. Reviewed in March 1987 issue.

Bop'N Wrestle (Mindscape). Now available for IBM Personal System/2. Already out for Apple, Atari 800/XL/XE, C 64/128, and IBM PC/PC*jr*. Reviewed in October 1986 issue and *Software Review 1987*.

Balance of Power (Mindscape). Now available for IBM Personal System/2. Already out for Apple, Amiga, Atari ST, IBM PC/PC*jr*, and Macintosh. Reviewed in April 1986 issue and *Software Review 1987*.

SEND US YOUR HINTS—AND WIN A FREE GAME!

Don't miss the opportunity to share your original game hints and tips with other readers. Submit entries to: Entertainment Editor, FAMILY & HOME-OFFICE COMPUTING, 730 Broadway, New York, NY 10003. Include your name, address, telephone number, a short description of the game, and the brand and model of computer you own. If your tips are selected for publication, we'll award you a new game for your computer. We reserve the right to edit submissions for accuracy, clarity, and length. Unfortunately, we won't be able to acknowledge each submission.

EDITOR'S NOTE: *Titles listed for the IBM PC/PCjr will also run on many IBM compatibles. Owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility. "Apple" refers to the Apple II series.*■

FAMILY COMPUTING®

CHRISTMAS WISH BOOSTS FAMILY ENTERPRISE

The Dial Family of West Frankfort, Illinois

BY JEANNE DIAL

Next month, this new department will feature answers to readers' computing questions.

There were some raised eyebrows among our acquaintances and families when we bought our first computer in 1982. We even questioned our own intelligence for a few weeks, but we no longer doubt that it was one of the best investments of our lives. Now, we have five computers, and we use them for our rental business, in my husband Bob's coal mining job, in my part-time teaching positions, for the children's education, and to pursue our hobbies.

WHAT A GUY!

I began to see the value of computers and word processing in 1982, while I was finishing my education degree at Southern Illinois University in Carbondale, so I asked for a $99 Timex Sinclair for Christmas. Bob took my wish to heart and began researching the field, talking to experienced computerists and reading library books. At that time, computer owners were scarce, and even the computer salespeople we spoke with weren't aware of the computer's potential in the home. (That's changed dramatically in the past five years; we have lots of friends with computers and have found salespeople to be much more knowledgeable.)

But instead of the $99 Timex Sinclair I'd asked for, Bob toted home an Apple II Plus with dual disk drives and an Epson MX-80 dot-matrix printer. He paid $3,800 for the entire system, and I nearly had a coronary.

The Dial family (clockwise, from top): Bob; Jeanne; Laura, 8; and Matt, 12.

That was four years ago. We've since added an Apple IIe, an Apple IIc, an IBM PC XT, and a Zenith 181 laptop to our collection for home and business use.

TAKING CARE OF BUSINESS

We began adding computers to our lineup with the opening of our two rental stores, Dial Rentals & Sales Inc., in West Frankfort and Benton, Illinois. In the beginning, we were able to manage our bookkeeping, personnel records, and filing on the Apples, using *VisiCalc* and *AppleWriter*. As the stores expanded, the volume of business outgrew the floppy-disk system. We found we needed the memory and speed of the IBM PC XT with a 20MB hard disk; we also converted our records to Peachtree's *The Complete Business Accounting System*.

We make all the necessary signs, labels, and banners for the stores with the XT and Broderbund's *The Print Shop*; Bob has added the IBM-compatible Zenith to handle general ledger work. In addition to the first Epson printer, we have an Epson MX-100 and a Brother HR-15 letter-quality printer.

COMPUTING TOGETHER

The entire Dial family uses computers daily. Computing has become Bob's number-one hobby; he reads the documentation on new software and is my computing instructor. Bob also uses the computer to compile weekly reports for his job as maintenance foreman for the Old Ben Coal Company, and he even designed a database that would tell him the parts he'd need for specific maintenance jobs. He also has realized all the ways a computer can be used in the business.

My computer-fanatic husband and I have a son with the same characteristics. Matt, who is 12 years old, saved his money last year and was able to buy an Apple IIc, which he installed in his room. Each afternoon at four o'clock, you can hear the *beep-beep* of the computer and the shouts of Matt and his friends as they play games.

Matt wrote a short program this year to check his math homework, and his sixth-grade teacher recently made Matt his aide in the school's computer lab. Our daughter, Laura, 8, and Matt both budget their weekly allowances and keep their totals on the computer. Laura is completely comfortable with computers, and, like her brother, is sometimes asked to help the other children in the computer lab.

We entertained ourselves with the laptop on a recent vacation trip to North Carolina: I tried to learn *WordPerfect* (WordPerfect Corp.) while Bob was driving; Bob worked on his inventory program in *dBase III Plus* (Ashton-Tate) while I drove; and Matt used *dBase III Plus* to enter the license numbers and models of cars on the road when he could get the computer away from us!

CHANGING WITH THE TIMES

Over the past four years, drastic improvements have been made in software, making it more practical and user-friendly. Still, many older programs are limited only by the user's imagination and patience. Computer systems can be purchased for much less than we paid for our first system, and more computer users, magazines, and salespeople are available for help and support. I knew all along it would happen this way when I asked for a $99 computer for Christmas! ■

SEND US YOUR STORIES AND QUESTIONS

Please mail computing questions or family profiles to: FAMILY & HOME-OFFICE COMPUTING, *Attention: Family Computing Department Editor, 730 Broadway, New York, NY 10003. Profiles should be no more than five pages, double-spaced and printed or typewritten, and demonstrate your family's use of the computer for a range of applications, such as working at home, personal finance, home management, education, and entertainment. If your essay is selected for publication, you will receive a software package for your computer.*

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CIRCLE READER SERVICE 46

MACHINE SPECIFICS

NEWS, OPINIONS, QUOTES, AND RUMORS ABOUT YOUR FAVORITE COMPUTER

APPLE

BY CHARLES H. GAJEWAY

In one of its most sweeping and varied product introductions ever, Apple showed seven new products at MacWorld Expo in Boston last August. "Today is my most exciting day at Apple since we introduced the Macintosh in 1984," said Chairman and Chief Executive Officer John Sculley, who delivered the keynote address to a huge throng of Apple lovers. Over a three-day period, an estimated 26,000 people each paid $15 to crowd the exposition center and gawk at the wares of more than 260 exhibitors.

"At the time of MacWorld Expo in 1985, no one was saying anything very nice about Apple," said Sculley. "But coming here that August and seeing all you enthusiastic people restored a large measure of my self-respect. You are as much responsible for Apple's success as anybody."

Indeed, for many observers, this exciting event seemed to mark the culmination of a long uphill climb to respectability for Apple's favorite machine, the Macintosh. It is now solidly entrenched as a computing standard that users and developers can count on.

Apple vs. IBM. Alluding to the "other" operating system, Sculley said, "Apple and IBM are still on very different journeys and will be at the turn of the century. The epicenter of the industry has moved from the mainframe to the network and to individuals. From that perspective, the mainframe is a marvelous peripheral. [A roar of laughter.] But IBM's PS/2 line will still be a peripheral to the mainframe in the year 2000."

HyperCard. The most exciting of Apple's new products is *HyperCard* (1MB required, hard disk recommended), erector-set software that gives people the tools to build flexible information systems. *HyperCard*, which comes bundled with all new Macintoshes (available for $49 for others), uses the index-card metaphor. Users can create—through pull-down menus and a straightforward programming language—"stacks" of index cards that mix

A screen from the Address stack of *HyperCard* with clock and customized buttons.

text, graphics, sound, and animation. These cards can be linked together and accessed quickly by clicking on-screen buttons.

Chief developer Bill Atkinson (also known as Mr. *MacPaint)* was distributing a disk of *HyperCard* goodies at the show in an effort to launch a nationwide shareware movement of "stackware." He and others at Apple expect that the simple programming language, HyperTalk, will encourage nonprogrammers—be they professors, musicians, or baseball fans—to create their own information systems.

"They say that real men don't program in Pascal; they program in C or Assembly," said Jean-Louis Gassée, Apple's senior vice president of research and development. "My prediction is that real men—and real people—will program in HyperTalk."

MultiFinder. Operating System/2 may *promise* multitasking (the ability to run two or more programs at the same time) to the MS-DOS world, but Macintosh offers a type of multitasking *today*—with *MultiFinder 5.0*. This latest version of *Finder*, distributed with all new Macs ($49 for others), is capable of running concurrent Unix, MS-DOS, and Macintosh applications. Using *MultiFinder*, you can laser print or transmit a file in background while working on another task. Finally, you can cut-and-paste between documents, so that you can take part of a Lotus *1-2-3* worksheet and paste it into a *Microsoft Word* document.

AppleFax Modem. The AppleFax Modem ($699) is an external device (with two pieces of software included) that looks much like a modem. And in one sense it is a modem: it can send files at up to 9600 baud to other AppleFax Modems. But the device can also send or receive facsimile files from a network of more than two million Group Two or Group Three facsimile machines around the world *(see "Facsimile Phones" in this issue)*. Any Macintosh file can be converted into a facsimile file with software that comes with the AppleFax Modem.

As an added touch, the AppleFax Modem uses the same fonts in the new Apple ImageWriter LQ printer ($1,399), a wide-carriage 27-pin printer. These fonts can be sent to any facsimile machine; received transmissions can be printed out on the LaserWriter, ImageWriter, or ImageWriter LQ printers.

Apple's other new products—the Macintosh II EtherTalk Interface Card ($699), AppleShare PC (available beginning the first quarter of 1988), and AppleFile Exchange (included as system software with all new Macs)—are all "connectivity" products designed to enhance the sharing of files between different networks and computers.

CHARLES H. GAJEWAY *can be reached on CompuServe* (ID: 73357,3577) *or on GEnie* (ID: C GAJEWAY).

ATARI

BY JOHN J. ANDERSON

Whatever happened to Microsoft *Write*? This word-processing package was previewed with great hoopla several months ago, yet a finished package has yet to see the light of day. Very nearly finished now, we hear, though a few small bugs still need to be stamped out.

Atari PC. By the time you read this the first Atari PCs should have reached these shores. The new computer has more power and features than the IBM PC, says Sam Tramiel, president of Atari. Designed around the Intel 8088-2 chip, the switchable system performs at either 4.77MHz or 8MHz and has 512K, expandable internally to 640K.

Atari is the first IBM PC-compatible manufacturer to announce

support for the EGA graphics mode as a standard feature. Other graphics modes supported by the custom-designed graphics chip are CGA, IBM monochrome, and Hercules graphics card. Therefore, you will be able to use a range of monitors without adding interface cards.

The Atari PC has a built-in Centronics parallel port for printers and an RS-232 serial port for modems and serial printers. It will be sold with a detachable IBM-style keyboard, mouse, and mouse port and will be bundled with GEM desktop software from Digital Research and MS-DOS 3.2. The PC will be sold through mass merchants and computer specialty stores. The system—including a computer, disk drive, and monochrome monitor—is priced at $699. The computer and disk drive alone will sell for $499.

JOHN J. ANDERSON *can be reached on CompuServe* (ID: 76703,654).

COMMODORE

BY SHAY ADDAMS

What's my beef? Programs that ignore the 128's extra memory (this refers to programmers and decision makers at the software companies). It didn't bother me until I talked to Robert Woodhead, who said the conversion of *Wizardry* (Sir-Tech) for the 64 and 128 will recognize the 128's extra memory and use it as a RAM cache to minimize disk access. Not only that, but it will do the same for a 64 with a RAM expansion. Woodhead also says that the operating system has boosted disk access by 5.2 times the normal speed!

Now if a game can do that, why not an application program? A database that frequently accesses the disk is the first thing that comes to mind. Most software is still designed for the 64 and doesn't take advantage of the 128's increased memory.

One Million 128s. Such a development strategy may have been adequate last year when the number of 128s in use was questionable, but Commodore now says that a million 128s have been sold worldwide. So I don't want to hear any more excuses containing the phrase "no installed user base." Maybe a letter-writing campaign is in order. If you've never used the mail-merge option on your word processor, this might be a good time to give it a shot.

Art Studio. While we're in the studio, let's check out the latest art software from England, Firebird's *The Advanced Art Studio.* This two-disk program ($40) provides three levels of magnification, 16 user-definable brushes, and a font editor with nine character sizes and text-oriented special effects. All work is done in windows, so the menus are always present. It will even print your creations sideways, if necessary, and do screen dumps.

Support is built in for all major printer drivers, and you can define parameters for your own driver if necessary. You can use a KoalaPad, a joystick, or a Datex mouse for input and for making selections from pull-down menus.

Amiga 2000. As I wrapped up this column, Commodore's Jim Gracely told me all the hardware that the company has been promising this year is a reality. The FCC has finally granted approval for the Amiga 2000, and workers were nailing machines together on the assembly line as we spoke (honest, I could hear them in the background!). The Amiga 2000 *should* be on store shelves by now.

SHAY ADDAMS, *editor and publisher of* Questbusters, *an adventure-game newsletter, can be reached on CompuServe* (ID: 72267,601) *or on QuantumLink* (ID: JBCHALMER).

IBM

BY HENRY BEECHHOLD

With Macintosh-based desktop-publishing systems setting the pace and the standards in this madly competitive segment of the micro market, can IBMers hope to rise above second-class citizenship?

Last month, I mentioned IBM's announcement of its Personal System/2 *SolutionPac*—a desktop-publishing system. But since *SolutionPac* works only on the Model 30 (the other PS/2 models can't drive the IBM laser printer, but the XT and the AT can), it cannot begin to keep up with the Mac's dazzling operation. So there's no hope, then?

Wrong. My tarot cards tell me that as soon as *SolutionPac* acquires a little history, IBM will adapt the interface so that the laser printer runs on the models 50, 60, and 80.

With a well-tested publishing package running on a truly new and fast machine, IBM desktop publishing will have come of age. Such a system will cost much more than a cheese sandwich, but for the home-based printing business in search of increased productivity with IBM, the investment will be worth it.

Shaky Writing Skills? *RightWriter* (RightSoft Inc.; $95, plus $4 shipping) is a friend you can lean on. Subtitled *The Intelligent Grammar and Style Checker*, the program analyzes your text files according to the Flesch-Kincaid Readability Rules for plain, simple English. It produces a marked copy of your original file, which can be viewed on the screen and/or printed out.

But you make the actual changes according to your best judgment. For example, *RightWriter* will indicate every instance where the passive voice is used and include these occurrences in the statistical summary of your work. But not all uses of the passive voice are inappropriate. You must decide.

The program will work with plain ASCII files as well as special files produced by various word processors. In addition to catching grammatical and stylistic problems (if, indeed, they are always problems!) and peculiar uses of uppercase and lowercase letters (as in *RightWriter*, for instance), the program will spot missing punctuation marks and presumed misspellings. The misspellings appear in a "words to review" list that includes words the program doesn't recognize, as well as colloquial and improperly used words.

At the end of the analysis cycle, *RightWriter* gives you a summary of your writing in several categories. The program works well and can be most helpful to anyone anxious to write readable, grammatically correct, properly punctuated documents. It has relatively little value, however, for highly skilled writers.

HENRY BEECHHOLD *is the author of* The Brady Guide to Microcomputer Troubleshooting & Maintenance *(Brady Books, Prentice Hall Press, New York).*

MS-DOS

BY STEVE MORGENSTERN

With all the interesting add-ons and plug-ins available for your computer, why spend money on a new keyboard? Maybe typing on your factory-equipment keyboard feels like

tapping on mashed potatoes. Perhaps you suffer from the NUM LOCK blues—that sinking feeling that hits every time you have to press the NUM LOCK key to switch from entering figures on the numeric keypad to using a cursor movement key, and vice versa. Or maybe you just need a faster way to move the cursor through a spreadsheet, a database, or even a graphics program. Here are some suggestions.

Separate Cursor Keys. Instead of replacing your whole keyboard, you might want to add Keypatch-10 ($90) from Genest Technologies. This separate minikeypad attaches to the top of your existing keyboard, adding a set of cursor keys that function even when the numeric keyboard is engaged. Installation couldn't be easier—one end of the unit's Y-connector plugs into the computer keyboard socket, and the other accepts your keyboard plug.

Get Smart. WICO, a leading joystick manufacturer, produces a replacement keyboard that isn't just fun and games. The Smartboard ($400) features a built-in trackball plus user-programmable function keys. The trackball is a very fast way to move the cursor around the screen. Rolling the ball simulates a series of rapid-fire cursor-key presses, so the Smartboard doesn't require any special software. The function keys let you store a string of keystrokes in battery-backed memory and play them back with a single keypress. Unfortunately, there is no way to use the trackball as a substitute for a mouse.

Key Tronic. The KB 5153 Touch Pad Keyboard ($399) from Key Tronic weighs a ton. But it also has a heavyweight special feature—a unique multipurpose 3.5-inch-square touch pad. In cursor-key mode, you can move the cursor around the screen by running your finger or a stylus across the pad's surface. Load the mouse-driver software and the touch pad emulates a mouse and can be used with programs that accept Microsoft-compatible mouse control.

The touch pad also can be subdivided into four, nine, 25, or 36 programmable function keys (overlays are provided to indicate where each "key" is located). You can even combine function key and mouse modes simultaneously.

STEVE MORGENSTERN *can be reached on CompuServe* (ID: 72545,606).

TANDY

BY STEPHEN MILLER

Mark Eppley had faith in the Tandy laptops when others questioned their potential in that market. After six years, Traveling Software, his company, has carved out a niche for itself by supplying quality add-ons to the Tandy portables. The company's Lap-Link cable-and-software link helps transfer files from desktop computers to the new Tandy LT 1400 and other portables. But its latest product is one that will gladden the hearts of those diehard Model 100 fans.

2MB Model 102! The Booster Pak will boost the memory of a 100 or a 102 to an enormous 2MB. The pack is a box that lets you add as much or as little power as you need. The basic unit ($429) comes with 136K of additional memory. Through December 31, *Desk-Link* will be included. This ROM software allows for the rapid transfer of data files to and from MS-DOS machines.

Booster Pak has additional slots so that you can add more memory, a 1200-baud internal modem ($199), a rechargeable NiCad battery ($69), and all Traveling Software's ROMs *(see review of* Sardine *in last month's issue)*. The Booster Pak weighs only 10 ounces and attaches to the bottom of the 100 or the 102.

EX DOS Update. Tandy is selling DOS 3.2 as an upgrade for the EX ($30; Cat. No. 25-1170). MS-DOS 3.2 certainly has some advantages over 2.11, the version supplied with the EX. But it makes most sense if you have added memory, a second disk drive, or a hard disk. If you're primarily using *Personal Deskmate* and running games, the upgrade seems to me to be gilding the lily.

CoCo 3 Workout. *Pyramix* (Spectrum Projects; $30, plus $3 shipping) is the first arcade-style game I've seen that really puts the CoCo 3 through its paces. This game is the Colorventure version of the arcade favorite *Q-bert*. The game opens with the entire game board dropping from out of nowhere and slowly bouncing to a halt. The colors are sharp and crisp, and the sound rivals arcade quality. *Pyramix* is a well-done translation and should keep you gamesters happily occupied for hours. It's available from Spectrum Projects, P.O. Box 264, Howard Beach, NY 11414.

PHONE NUMBERS

A.T.& T. Liquidators (714) 751-2667; Apple Computer (408) 973-2222; Atari Corp. (408) 745-2000; Commodore Business Machines, Inc. (215) 431-9100; Firebird Licensees, Inc. (201) 444-5700; Genest Technologies (714) 547-0880; IBM (800) 447-4700; Key Tronic (509) 928-8000; Microsoft Corp. (206) 882-8080; Orphanware (216) 882-4720; RightSoft Inc. (813) 952-9211; SirTech (315) 393-6633; Spectrum Projects (718) 843-4288; Tandy Corp. (817) 390-3011; Traveling Software (206) 483-8088; WICO Distribution Co. (312) 647-7500.

STEPHEN MILLER *is a computer consultant and journalist.*

ORPHANS

BY PATRICK SPERA

For those of you who can't find any discount software, try A.T.& T. Liquidators. They seem to have something for every microcomputer ever made—CP/M, TRS-80s, Timex, TI—it doesn't seem to matter. The prices are incredible—an Osborne modem for $30, and three TI-99/4A programs for $25, just to choose a couple of steals.

Just send A.T.& T. a self-addressed, stamped envelope (to 2640 South Harbor Blvd., Santa Ana, CA 92704) and indicate what computer and operating system you have. A.T.& T. will send you a price list of hardware and software available for that machine. And dealers, if you can't wait for people to follow my advice and raid your old stock, then call A.T.& T. and ask for Art. You can dicker with him!

512K ADAM. John Lingrel has been busy this past year! Orphanware (P.O. Box 324, Canal Fulton, OH 44614) is now carrying his 512K memory board. This replaces the Coleco 64K expansion board. Before replacing yours, you need a printer interface ($30 with expansion board from Orphanware) or an addresser ($17.50).

Depending upon how you set up the memory, you can use the extra memory as a RAM disk. The price is $285 for the 512K version; a 256K version is also available for $165; the 128K version costs $115. People who already own the 256K board can upgrade to 512K for $120.

PATRICK SPERA *is sysop of the Computer Club Forum on CompuServe* (GO CLUB), *a meeting place for owners of orphaned computers.*

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Strokes C

If you haven't been to Europe or taken a world tour lately, you may not have heard of AMSTRAD. So, let us introduce ourselves.

AMSTRAD is the British company that makes the best selling computer in Europe.* We even outsell IBM. And worldwide, over 2,000,000 AMSTRAD computers have been sold — not to mention all the AMSTRAD printers and word processors in use.

Now AMSTRAD is coming to America. And you'll soon see why AMSTRAD is making the competition very nervous.

Why buy your computer in expensive little pieces?

With most computers, expanding capabilities means spending a fortune for add-ons. Not with AMSTRAD.

Both the PC1640 and the PC1512 come with additional ports *built-in*. That means no expensive brain surgery is required when you're ready to expand.

AMSTRAD computers also allow you to upgrade graphics capabilities — also without brain surgery. The PC1640 has monochrome (Hercules), CGA and EGA capabilities built into a single motherboard. So, to make your work look better, simply install a more sophisticated AMSTRAD high quality monitor. (Starting to see why AMSTRAD is so popular?)

Everything you need in two manageable boxes. Everything.

Naturally, both models are IBM compatible. They'll run virtually all IBM software for every business or personal need you can think of. And not only that, we've built in the boards necessary to run mouse-driven, windowing GEM® software to create spectacular graphics. We even give you a mouse.

Of course, we realize that's not everything you need to start computing. That's why both computers come with lots of software — MS DOS V 3.2, GEM® Desktop, GEM® Paint, LOCOMOTIVE Basic and more.

Imagine. Virtually everything you need to start computing within minutes after you open the box. (A smart way to buy a computer, don't you think?)

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AMSTRAD gives you a choice of two brilliantly designed printers — the DMP 3000 and the DMP 4000. Both offer IBM compatibility and a list of standard features other printer manufacturers call options.

*Source: International Data Corp.

# of Genius.

(We're making our competitors nervous in that department, too.)

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If you just want to express yourself in plain English, but don't want to learn the language of computing, you'll love AMSTRAD's 9512 Word Processor. It's incredibly easy to use, comes with powerful built in software to perform a variety of tricks, a large, high-resolution monitor — and a letter quality daisy-wheel printer. To create a bestseller, all you need to add is a great plot.

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With more than 700 dealers in America already (and the number is growing fast), it's no wonder AMSTRAD is quickly becoming famous for putting high performance within reach of thousands of businesses and personal users.

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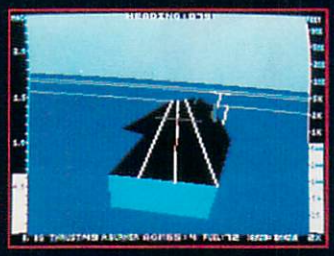
CIRCLE READER SERVICE 4

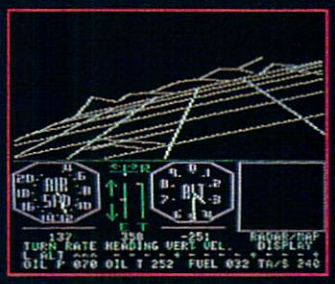


1985 - High-performance Jet flight simulator for the IBM, Commodore 64, and Apple II computers

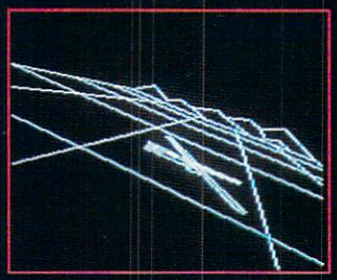
1987 - Expanding Scenery disk coverage; East Coast, Japan, & Europe

1986 - Flight Simulator II for the 68000 computers

1982/1983 - Microsoft Flight Simulator & Flight Simulator II



1979 - 3D graphics applied to the original FS1 Flight Simulator for the new Apple II and TRS-80 computers



1977 - SubLOGIC's 3D graphics package in BASIC and M6800 Assembly Language

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Some say our technology has helped us define the state of the art in flight simulation. We believe our ten years of dedication have gotten us where we are today.

SubLOGIC's first black & white 3D graphics routines, developed in 1977, paved the way for our introduction to flight simulation and aerial combat gaming theory. Our second-generation Flight Simulator II was so well conceived that even we find it difficult to improve upon. Jet's spectacular land and sea battle scenarios set another classic milestone in state-of-the-art simulation gaming. Scenery concepts incorporated into SubLOGIC flight simulation products right from the start continue to evolve as we introduce new, more beautifully detailed areas of the world to explore. And coming in 1988 - a flight control yoke for even more realism!

We invite you to help us celebrate our first decade of success, and share in our anticipation of the next ten years to come. SubLOGIC tenth-anniversary promotional shirts and posters are available at your dealer or directly from SubLOGIC. See your dealer, or write or call us for more information.

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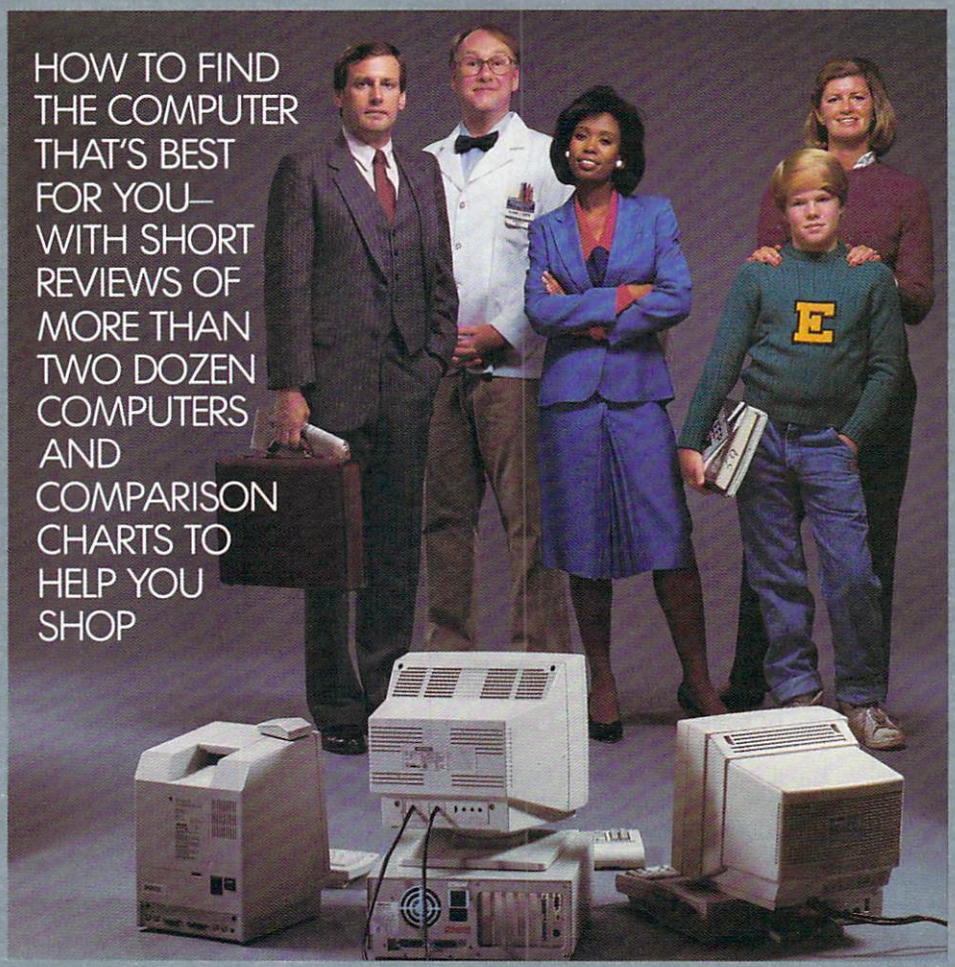
CIRCLE READER SERVICE 51

FAMILY & HOME OFFICE COMPUTING

BUYER'S GUIDE TO COMPUTERS



HOW TO FIND THE COMPUTER THAT'S BEST FOR YOU—WITH SHORT REVIEWS OF MORE THAN TWO DOZEN COMPUTERS AND COMPARISON CHARTS TO HELP YOU SHOP

PHOTOGRAPH BY JOEL WHITE

BY DAVID HALLERMAN AND NICK SULLIVAN

Have you ever bought a stereo system? Did you opt for a relatively inexpensive stereo rack system that came ready to plug in and turn on? Or did you mix and match separate components from different manufacturers—spending both more money and time in the process?

Shopping for a computer involves similar decisions. You can find full systems for less than $500, but you can also spend $5,000 to build a customized system. As with a stereo system, you should know what software you want to run and the size of the disk it comes on before you buy. Do you want a portable system, one that looks good in your den, or a big box that works like a team of mules?

Beyond these obvious similarities, other basic consumer principles apply to both shopping experiences:

Never buy based solely on price. Everyone wants a deal, obviously, but the $200 or $500 you save may come back to haunt you if the system doesn't perform up to your expectations.

Know beforehand how you want to use the computer and who will use it; this might dictate your choice.

Ask about support. How good is the warranty, how far do you have to ship the box if the computer breaks, and how stable do you judge both the vendor and manufacturer to be?

Finally, trust your instincts! You've bought goods before. Do you like the way the computer looks and feels? You're the one who will be using it, probably on a daily basis.

THREE MAJOR GROUPS

To help guide you through the sometimes confusing computer-shopping maze, we've divided computers into three major groups.

CLASSICS. Old, established, and time-tested, this group is particularly strong for games and education and is good for personal finance, filing, and writing tasks.

DAVID HALLERMAN *and* NICK SULLIVAN *are senior editors for* FAMILY & HOME-OFFICE COMPUTING.

This group includes enhanced versions of the original popular computers—the Apple II, the Atari, the Commodore 64, and the Tandy Color Computer.

MOUSE MACHINES. These sophisticated computers are graphics-oriented, and all come with mice and elegant operating systems that allow you to point-and-choose from menus and icons. This group includes the Amiga, the Atari ST, the Apple IIGS, and the Macintosh.

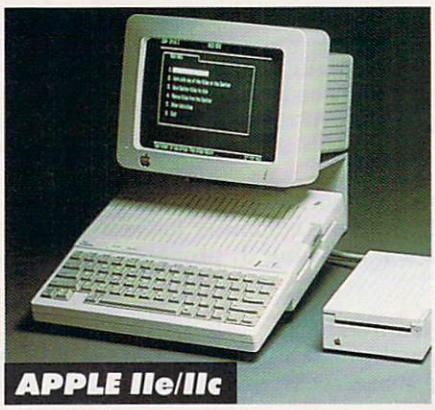
MS-DOS MACHINES. There's a whole world of IBM-compatible computers that run MS-DOS programs particularly geared to business applications. With scores of machines to choose from, we've looked at more than a dozen IBM PC and XT compatibles, some with the traditional 5.25-inch drives, some with the newer 3.5-inch drives.

Begin your tour by reading the general remarks on each group and then the comments about the specific machines. Then refer to the *"Computer Types at a Glance"* chart for more details on the machines.

CLASSICS

Why buy one of the old pros? The availability of much educational and game software—especially for the Apple II and Commodore 64—can make these machines good computing investments for your children. At this level, you can use a TV for a screen display, saving on system costs. Add monitors and these machines are powerful enough for personal finance, filing, and writing tasks. Finally, as the newer mouse machines and standard MS-DOS machines take over the market, you can find good prices on these older machines, and they're often bundled with a monitor and a printer. If you buy from a discounter, though, you can't expect any real support. However, so much information is readily available for these computers—in the form of books, magazines, and users' groups—that you may not need any support.

Why *not* buy a classic? You'll be bucking the trend—which is toward faster machines with more memory—and thus won't keep abreast of upcoming advancements in computer technology. And if you expect to use the computer frequently for business tasks, you'll spend as much to assemble a working system as you would for a more powerful machine, such as an Atari 520ST or the Tandy HX. Even then, you won't be able to run such popular business packages as Microsoft *Word*, Lotus *1-2-3*, *Excel*, or *dBase III Plus*.



APPLE IIe/IIc

With any Apple II, you get the most popular computer in elementary and secondary schools, as well as the most businesslike of the old reliable machines. The Apple IIe has eight internal expansion slots, which make it easy to soup up. While several slots must be used for such common devices as serial, parallel, and disk-drive interfaces (ports), other IIe slots can be filled with such extras as expanded memory (1MB or more), a hard-drive interface (a Macintosh-compatible Small Computer Systems Interface), a speech synthesizer, and a mouse port. However, given its age, the IIe is still relatively expensive.

The Apple IIc—a small, neat unit that's perfect for a small desk—comes with a built-in disk drive, a mouse port, and two serial ports (for a printer and a modem). But it has no slots. Your dealer, however, can expand the latest IIc to 1MB with an internal board.

LASER 128

This Apple II compatible is a cross between the IIc and IIe. Like the IIc, the Laser 128 comes standard with 128K memory, built-in ports along the back (although there are more of them, including a parallel printer port), and a 5.25-inch disk drive on the right side. Like the IIe, the Laser 128 has a slot that accepts standard Apple expansion boards. The only problem with the slot is that it's external, so that any board put into it will be exposed to dust and dirty fingers. Still, anyone interested in an Apple II should also look at the less expensive Laser 128.

ATARI 130XE

The 130XE is the latest of a long line of Atari computers that began with the Atari 400, and it's a lively machine. Other than games, however, we've seen far too few new programs for this aging line. But there are some solid, older programs available, such as the *Atari Writer Plus* word processor. The XE can serve as a reasonable beginner's computer, but compare it to the similarly priced Commodore 64 before buying; the C 64 offers more software.

COMMODORE 64c/128

As a first computer for a curious child of any age, the C 64c offers several virtues. Even after you add the necessary disk drive (and color monitor, if you don't want to use a TV), the price is less than $500. And you'll be able to write, explore, and draw with your computer right away, since Commodore now bundles the *GEOS (Graphic Environment Operating System)* software along with *GEOWrite* and *GEOPaint*. (To take full advantage of this software, you'll probably want to add a mouse; the Commodore 1351 is $50.) Also included is software for going on-line with the popular QuantumLink information service (a modem is required). A range of game and educational software is available, and much of it takes advantage of the C 64's alluring three-voice sound output. You'll also be able to buy productivity software that is relatively sophisticated, but limited by the speed and memory of the superannuated C 64. The C 64 has all the signs of a computer nearing the end of its life cycle.

Meanwhile, even though more than one million have been sold, the C 128 continues as somewhat of an afterthought for many software developers. Since it runs nearly all C 64 programs, and there are a lot more C 64s than C 128s out there, few software developers have taken advantage of the C 128's extra memory, faster disk drive, and higher resolution (both 40-column and 80-column displays). It's expandable to 640K with a 1750 512K RAM Expander from Commodore ($200).

TANDY COCO 3

The third model in Tandy's Color Computer line—which will run almost all CoCo 1 and CoCo 2 software—is quite a robust machine. You start off with 128K and can expand to 512K. Included are composite and TV video ports and an analog RGB port capable of producing four vivid colors (out of 64) at a high 640 x 192 resolution (with RGB monitor). One of the available operating systems is called OS-9 (not to be confused with Microsoft's much heralded OS/2)—a powerful, but complex operating system capable of simultaneously running two or more programs. With all that and Radio Shack's far-flung network of stores and service centers, the latest CoCo seems like a good bet. Two drawbacks: there's much less *good* software for the CoCo than for the C 64 and Apple II, and there are very few programs written to use the CoCo 3's extra capabilities.

MOUSE MACHINES

Why should you consider mouse machines? They're easier and more pleasurable to operate than other micros. They offer better graphics and better sound than the other computers listed here, with the exception of IBM's Personal System/2 series' graphics. Some of the most innovative software we've seen (such as *HyperCard* for the Macintosh and *Deluxe Video* for the Amiga) is available only on one of these computers. The mouse machines all use 3.5-inch disks, which store more and are more reliable than 5.25-inch floppies. Finally, they're very powerful machines that are capable of handling from one to nine megabytes of memory (standard).

Why *not* consider one of the mouse-based machines? We've heard people say that they don't like the physical act of moving a mouse, dragging it across a desk while holding down its button, nor do they enjoy the "toylike" graphic interfaces. They say they would prefer to simply use the keyboard. (Actually, that's why more and more programs on these machines offer users a choice of mouse or keyboard to accomplish the same functions.) Also, with the exception of the Mac, the mouse machines haven't been used widely as business machines, which means you won't be able to exchange files and disks as easily with MS-DOS computers.

When shopping, direct comparisons are difficult because none of these mouse machines are compatible with the others. Also, while they all use the icon-based, point-and-choose interface, each offers subtle yet real differences, such as the mouse's feel as you control the computer.

The minimum acceptable memory for any mouse computer in this group is 512K, but purchase a full megabyte if you can, since more and more programs either demand or make full use of the extra memory. Two disk drives are almost a necessity, and it's best if one of those is a hard drive.

AMIGA 500/2000

Both new Amiga computers are improved versions of the original Amiga 1000, which was introduced two years ago. On both, the colors are stunning and the sounds sophisticated. Some powerful and useful programs have been developed for the Amiga, particularly in

the growing area of desktop video. But the Amiga models we've seen aren't stable machines and sometimes crash for no obvious reasons. Yet, the Amiga is a powerful and exciting machine and the only microcomputer listed here that's capable of true multitasking.

As the entry-level machine to Commodore's Amiga line, the 500 combines setup ease with power. This one-piece unit contains 512K (easily expanded to 1MB internally), one 880K 3.5-inch disk drive, four-voice stereo output, and ports for a printer and a modem. Just realize when you're shopping that the low basic price doesn't include a monitor or a second drive. You can't really use your TV, either; to maximize the Amiga's output, you need an Amiga RGB monitor ($400).

The boxlike Amiga 2000—which we've seen only in prototype—is built for expansion. It has nine slots—five compatible with the Amiga and four compatible with the IBM PC XT standard. For instance, you can run MS-DOS software by installing the Amiga Bridge board ($500). And, because of its multitasking ability, you can run an MS-DOS program in one window and an Amiga program in another.

APPLE MACINTOSH PLUS/SE

Of all the computers covered in this guide, Apple's Macintosh Plus and SE models carry the highest price tags. But for the extra money, you purchase a time-tested, mature computer (now almost four years old) that has a wealth of powerful, intricate, and sometimes fascinating, available software. One of the most amazing programs, *HyperCard (see this month's Machine Specifics)*, comes with each new computer. It's easier to transfer graphics from application to application, or to merge text and graphics in word processors or desktop-publishing programs on the Macintosh, than on other computers.

Both models have black-and-white screen displays and a Small Computer Systems Interface (SCSI) that's designed primarily for connecting a hard-disk drive. The Plus is a closed system, but the SE has one expansion slot. For example, you can add a board for MS-DOS compatibility. Each Mac comes with *MultiFinder 5.0*, the new system software that allows you to have two or more programs open and on-screen at once. With the success of the Macintosh, Apple has become a solid company that should be around for years, and that's something to consider, too. Of course, if your work demands an MS-DOS machine, and you don't need all the graphic extras, then a Macintosh may be overpriced for you. A color monitor is also an option, but its considerable cost makes it unavailable to some people.

APPLE IIGS

The latest Apple II (the fifth in the line) runs at nearly three times the speed of the Apple IIe and addresses up to eight megabytes—so it's potentially a solid business tool. It has a palette of 4,096 colors (256 available at one time), and its sophisticated 15-voice Ensoniq sound chip is capable of producing some of the best sounds we've heard on a computer. But the supplied 256K memory is woefully inadequate; most of the GS-specific software demands at least twice that. So you'll need to upgrade to at least 512K, and 1MB is recommended. And up to now, none of the GS-specific productivity packages we've seen, such as word processors or spreadsheets, match the machine's potential power. Until software developers provide such programs, you can use virtually all of the thousands of programs designed for the IIe and the IIc. Compare costs here carefully, though, since after you've added an analog RGB monitor, a second drive, and extra memory, the IIGS costs about as much as a Mac Plus.

ATARI 520/1040ST

The ST costs less than the other mouse machines; its pricing is also competitive with (and sometimes cheaper than) the classics'. The 512K version (520ST), with monochrome monitor and disk drive, can be had for less than $500 discounted, and the color 1MB version (1040ST) is available for less than $900. (When the forthcoming Mega ST hits the stores in volume, these prices may drop even further.) The color graphics are always impressive, and text is sharp and easy to read on a monochrome monitor. There's even a unique, built-in MIDI port, which provides the standard connector for music synthesizers and keyboards. The Atari user community is extremely active, and Atari itself sponsors expositions around the country. This helps make up for the fact that the ST's software base, like the Amiga's, is not nearly as broad as that of the Macintosh.

MS-DOS MACHINES

Why buy an MS-DOS or PC-DOS computer? Just as English is the language of business, MS-DOS and PC-DOS (IBM's own similar operating system) are the operating systems of business (in the microcomputer world). More than 20 million MS-DOS machines are in use around the world, which means you're buying into a huge network of users. This guarantees an ample supply of software, assistance, and technical support. In addition, since MS-DOS computers have become virtual commodities, prices have plunged; you can often get more for your money than on other machines.

Why *not* buy an MS-DOS computer? The operating system is clunky, especially in this age of fluid mouse machines. And the color or monochrome graphics and sound don't compare with those of the mouse machines. While you can find plenty of good educational and game software, MS-DOS computers are primarily "of, by, and for" businesspeople.

Is there anything else to know before you make a decision? Yes! While all MS-DOS machines run the huge body of MS-DOS software, models from different manufacturers have distinguishing features. For instance, virtually all the models listed here use the Intel 8088, 8088-2, or 8086 microprocessor *(see "Glossary")*; more powerful MS-DOS computers use the Intel 80286 or 80386 microprocessor.

In the chart, we've broken MS-DOS computers into two general categories—those sold with 5.25-inch disk drives and those sold with 3.5-inch drives. In some cases, either the manufacturer or a dealer will sell a given computer with your choice of drive(s) and will even give you one of both. But this isn't always true and worth checking if the type of drive is a concern.

THE 5.25-INCH-DRIVE MODELS

AMSTRAD PC1512 DDM

The Amstrad comes with *GEM* software (Digital Research's *Graphics Environment Manager*) and a mouse, which sets the Amstrad apart from most other MS-DOS computers. In addition to *GEM* programs, which are graphics-based, you can use the mouse with any standard DOS application. This mouse-oriented system is designed and sold as a color system, but it's also available as a monochrome system (with built-in graphics). The power supply is in the monitor, so if the monitor needs repair you're without a computer. The computer has a joystick port, a necessity for gaming, but it's not compatible with standard IBM-style joysticks. Two more drawbacks: the color display is not particularly sharp for text, and the keyboard is nonstandard and cramped. The Amstrad is not the best machine for word processing (at least for clumsy typists), but is otherwise a flexible and enjoyable system and a good value.

COMMODORE PC-10

Commodore has a computer in each of the three major groups. The Commodore PC-10, an established computer in Europe, is much less distinctive than the C 64 or the Amiga lines and doesn't appear to be as good a value. The PC-10 comes with both color and monochrome graphics built in. Included in the package is Borland's *SideKick*, the best-selling desk accessory that costs $80 when sold separately. The PC-10 is large—not designed for a crowded desk. But the solid system unit is attractive and has a good keyboard.

EPSON APEX

Epson, once primarily a printer manufacturer, established itself as a computer maker with the reliable Equity line, which is sold through computer speciality stores. Now Epson is taking another step by selling its new Apex through mass-market outlets. The Apex, aimed at first-time users, comes with *PFS: First Choice* (Software Publishing Corp.), the integrated multifunction program. Thus, buyers will be able to start cracking right away. The Apex has only two expansion slots and thus isn't a machine with infinite expansion potential. It's best suited for families with general use in mind and for anyone who has a primary system at the office but wants a computer at home to complete tasks started elsewhere.

EPSON EQUITY I PLUS

The reason to choose an Epson Equity I Plus over an Epson Apex is expandability. The Equity I Plus delivers five slots compared to two on the Apex and includes a

serial port, which is not standard on the Apex. The Plus runs at a top speed of 10MHz, which is 25 percent faster than the Apex's. Neither computer, however, includes a monochrome graphics adapter. The whole Equity line (including the II and III Plus) has a clean attractive design, a good keyboard, a small footprint, and the backing of an established company.

KAYPRO PC

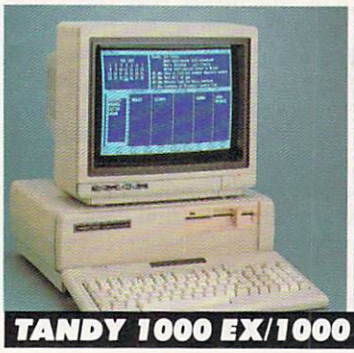
Ever since its Kaypro II transportable computer, Kaypro has been known for providing reliable workhorse computers and good values for the money. That's still true with the Kaypro PC, which comes with a ream of software (including *WordStar* and the *Word Finder* thesaurus) to start you along. The distinguishing feature of this PC is its size; its interior is positively barnlike. Thus, the Kaypro isn't suited for small desks. But it's ideal if you're the type who likes to continually plug in new cards. Kaypro also sells a large-screen monitor, the Kaypro Laser Printer, and *Ventura Publishing* as pieces of a desktop-publishing system.

LEADING EDGE MODEL D

The Model D (the "D" stands for Daewoo, the giant Korean manufacturer) has been on the market for more than two years now and has always been a good deal. The new version is faster than the original, but not much else has changed. The computer itself is compact and stylish, and the keyboard is one of the best around. It does not, however, have separate cursor and numeric keypads, as many keyboards do. Most Leading Edge systems come with two disk drives (either two floppies or a floppy and a hard disk), a monitor, and a good word-processing package, so you don't have to do any extra legwork before you start pecking away. The Infinite Memory System ($1,995) comes with 20MB removable disk cartridges, so that you have virtually unlimited storage space. Leading Edge's 15-month warranty is the longest in the industry.

PC'S LIMITED TURBO PC

PC's Limited is a direct-sales manufacturer that sells its computers by mail and phone. The customer saves the retailer's markup and can also custom order virtually any kind of model. The PC's Limited Turbo PC is a reliable machine with eight slots and a speed of 8MHz. Monochrome graphics are built in, as is a hard-disk drive, making the Turbo PC a good machine for small-business applications. The Turbo PC and the range of PC's Limited products are gaining high marks for value.



TANDY 1000 EX/1000 SX

Tandy now offers four models in its popular 1000 line. The EX, with a built-in drive on the side (much like the Apple IIc), is a one-piece unit that's neat and compact. It has a headphone jack and a volume control knob, making it good for gaming and educational uses. It's best used for such applications, since adding a second disk drive (external only) to increase productivity power makes it a sprawling system. You can add specially designed expansion boards much like the ones made by Tandy. Like the other 1000s, the EX has good three-voice sound.

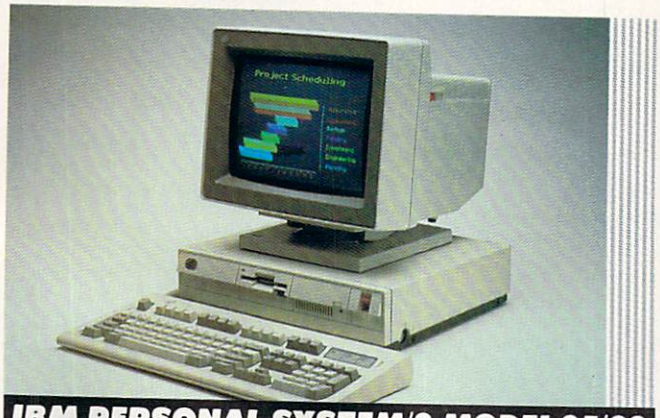
The SX is designed more for productivity, with room for two built-in disk drives and a detached keyboard that you can move around to fit your needs. The keyboard layout is slightly nonstandard, which can cause minor difficulties in running some application software. Third-party expansion boards can be used, as well as those from Tandy. The SX comes with *DeskMate II*, a useful multipurpose program.

VENDEX TURBO 888-XT

The Vendex PC is made by Korea's Samsung Electronics Corp. and marketed by The Netherlands' Vendex Pacific Inc., which has been selling VCRs, TVs, and radios

in the United States since 1985. The Vendex PC is a solid computer that comes with a good keyboard and a readable screen display. It also comes with start-up software—including a word processor, a spreadsheet, and a database—designed to get the novice up-and-going without too much trouble. If you do have trouble, you can dial a toll-free number for technical assistance. And, for a $50 fee, Vendex will send a technician to your house to help you set up the system. This hand-holding can be helpful.

THE 3.5-INCH-DRIVE MODELS



IBM PERSONAL SYSTEM/2 MODEL 25/30

The original IBM PC, XT, and AT are no longer manufactured, all replaced by the Personal System/2 line. The differences, as far as the Models 25 and 30 go, are 3.5-inch disk drives, increased speed over the PC and XT, and enhanced graphics capability. Already, a host of big-name software developers have upgraded existing applications to take advantage of those models' smaller disk drives and more colorful graphics. And, though the Models 25 and 30 aren't sold with mice, the computers have built-in mice ports, recognition that many users prefer mice with their keyboards. In another departure from its bare-bones method of selling, IBM has included serial and parallel ports on the Models 25 and 30.

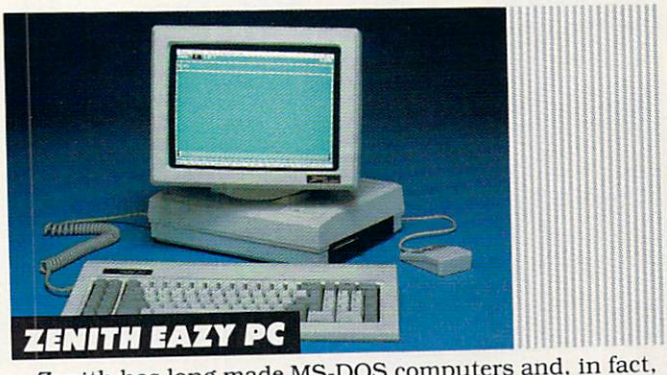
A few notches below the Model 30, as indicated by its number, the Model 25 comes with less equipment and less expandability. It's designed for a classroom setting for networking to a larger, file-serving computer. Thus, it has only one disk drive (a second can be added) and two expansion ports. But, if you have one particular task to accomplish, such as letter writing or filing, this computer might be useful in the home as a second computer.

TANDY 1000 HX

The 1000 HX is the first computer with MS-DOS built into the system. Instead of loading DOS from disk, you just turn on the computer, and, three seconds later, you are staring at a menu of choices. This start-up speed is a boon; however, if you require a higher version of DOS than 2.11, you'll have to load that from disk. The HX comes with a 3.5-inch disk drive, and you can get two. If you want a 5.25-inch drive to convert older files and programs or to run software in that format, you can add an external drive. The keyboard isn't detached from the computer, which makes for a neater but less flexible system. A volume control knob and a headphone jack for outputting three-voice sound make the HX a better computer for game playing than most MS-DOS machines. Even though the initial price is attractive, don't forget you'll need to add more memory (it comes with only 256K), a second disk drive, and a monitor—all of which push your cost near the $1,000 mark—still a good price for a complete color system.

TANDY 1000 TX

The 1000 TX is fast and expandable, well suited for home-business applications. It comes with one 3.5-inch disk drive, and you can add another—a 5.25-inch drive or a hard-disk drive. Though it employs the Intel 80826 microprocessor—the one used in AT-type computers—the TX is not properly an AT. It accepts only PC/XT-type expansion cards. Nonetheless, the processing speed of the 80286 is readily apparent in applications such as spreadsheet calculation, searching and sorting a database, or spell-checking a word-processing document.



ZENITH EAZY PC

Zenith has long made MS-DOS computers and, in fact, is one of the largest suppliers to governments and institutions. However, the EaZy PC marks a new direction, since it's aimed at first-time buyers. *MS-DOS Manager*, a graphics-oriented interface that uses windows and drop-down menus, comes with the computer. On the back, there's a mouse port and a parallel port (for a printer). Like many such computers, the EaZy PC is a truncated version of other models and can't be easily expanded. It comes with a 14-inch monochrome monitor, but color isn't an option and can't be attached. It comes standard with 512K; to add more memory you have to attach a "box" to the back of the system. It comes with a parallel port, but no serial port. That, too, comes with the "box."

COMPUTER TYPES AT A GLANCE

	Classics	Mouse Machines	MS-DOS Machines
Business	Apple IIe/IIc are the best all-around business machines in this group, especially the very expandable IIe, with widest range of software. C 128 is also good, but has limited software.	Macintosh has emerged as a viable alternative to MS-DOS for business. The software and user base are there, and swapping files with MS-DOS is becoming easier. Mac business system should include 1MB RAM and hard drive. Atari ST, Amiga, and IIgs lag far behind Mac in this category.	Virtually every type of business application is available—from industry-specific packages for, say, real estate managers, to classic spreadsheets. Get a hard-disk drive and either a monochrome or an EGA monitor (regular CGA monitors aren't sharp enough for prolonged use).
Personal Productivity	Well-equipped for filing, letter and report-writing, tracking spending and saving, and other personal/household tasks. You often need just one good program, such as *AppleWorks* for the Apple, to accomplish many jobs. Unless you use the computer frequently, you can get by with one disk drive; a printer is necessary.	All earn high marks in this category—all offer much help for writing, filing, and budgeting; they make these sometimes rote tasks more fun than on stodgy older systems. One disk drive will suffice, though two are better. ST's monochrome monitor sharper for text than color; Amiga color is a little fuzzy for text work.	No problem here. You'll be able to do anything you want, especially with high finance. There are several investing and personal finance packages (such as the popular *Managing Your Money*) for people at most income levels. A modem is useful for tracking investments, but otherwise a two-drive system is all you truly need.
Creativity	Better than MS-DOS computers, but not as suitable as the mouse-based machines. You'll probably need to buy add-on hardware, such as a graphics tablet or a card for high-quality music synthesis. Good for creative exploration.	These graphics-oriented computers are playgrounds for painting, drawing, music making, and CAD (computer-aided design). The Amiga excels at video applications; the ST is the darling of professional studio musicians; and the Mac is a serious tool for architects, engineers, musicians, and artists.	You've heard that MS-DOS can be a clunky and confusing operating system? Well, the machines were not creatively engineered and don't inspire creativity. You can (within limits and after buying extra hardware) paint and compose music, but this is the one category where MS-DOS machines rank lowest.
Education	Apple IIe/IIc and C 64/128 duos are especially good for education. The Apple has a wide base of school and home-education software; the Commodore has sound and color that delight children. CoCo has good color for young children and a price that makes it right for use with them. Color monitor (or TV), disk drive generally required.	With the exception of the IIgs, education is not yet a strong point of this group (and the GS doesn't do much that the IIe/IIc don't). But it's easy to add speech to all four computers; along with the rich graphics, that gives them much potential for learning. Children really like using the Mac and that can be educational, too.	More educational software is being published for MS-DOS machines *(see this month's Home-School Connection)*. However, except for the Tandy 1000s, which have good sound, this group can't compare with the mellifluous mouse machines or the C 64. This drawback isn't fatal, but worth considering. Requires color monitor, joystick.
Games	Excellent "game machines," particularly the Atari XE and C 64/128 for their fine graphics and sound. Apple IIe/IIc not as exciting, but has a vast library of games. CoCo is the weak sister in this group. Disk drive, color monitor (or TV), joystick required for all.	All rate "good" to "great" for games; just don't assume that a mouse is a good substitute for a joystick. Some of the games available are a real treat, such as *Earl Weaver Baseball* on the Amiga and *Dark Castle* on the Mac. Also, there seem to be more games that are better for adults than children on the Mac.	Once a drab, gray-suited bunch, MS-DOS computers now have an endless stream of games in the pipeline. What they lack in sound and color pyrotechnics, MS-DOS machines make up for with their large memories, which mean more room for the details that make gaming pleasurable. Joystick, color monitor, two disk drives recommended.

CLASSICS

Model/Manufacturer	Price	Warranty	Memory	Slots	Ports	Video Interface	Graphics Resolution	Hardware Included	Software Included
Apple IIc Apple Computer, Inc. (408) 973-2222	$940	90 days	128K/1MB	None	2 S, DD, J, M, A	CP	560 x 192 (16 colors)	DD	BAS, DOS, tutorial
Apple IIe Apple Computer, Inc. (408) 973-2222	$829	90 days	128K/1MB	8	DD, J, C	CP	560 x 192 (16 colors)	DD, MM, NK	BAS, DOS, tutorial
Atari 130 XE Atari Corp. (408) 745-2000	$150	90 days	128K	None	S, P, DD, A, 2 J, CR	CP, TV	320 x 192 (2 colors)	None	BAS
Commodore 64c Commodore Business Machines (215) 431-9100	$230	90 days	64K/320K	None	DD, 2 J/M, CR, user expansion	CP, TV	320 x 200 (16 colors)	None	BAS, DOS (w/drive), *GEOS, GEO-Write, GEO-Paint*, QuantumLink
Commodore 128 Commodore Business Machines (215) 431-9100	$349	90 days	128K/640K	None	DD, 2 J/M, CR, user expansion	CP, TV, RGBD	320 x 200 (16 colors)	NK	BAS, CP/M (w/drive), DOS tutorial
Color Computer 3 Tandy Corp. (817) 390-3011	$220	90 days	128K/512K	None	S, DD, 2J, C, CR	CP, TV, RGBA	640 x 192 (4 colors)	None	BAS
Laser 128E Video Technology Computers, Inc. (312) 272-6760	$479	90 days	128K/1MB	1	2 S, P, DD, M, J	CP, TV, RGBD	560 x 192 (16 colors)	DD, NK	BAS, DOS

MOUSE MACHINES

Amiga 500 Commodore Business Machines (215) 431-9100	$700	90 days	512K/9MB	1	S, P, DD, 2 A, 2 M/J/L	RGBA, CP	320 x 400 (32 colors) 640 x 400 (16 colors)	DD, MS, NK	BAS, DOS, *Workbench*, utilities
Amiga 2000 Commodore Business Machines (215) 431-9100	$1,995	90 days	1MB/9MB	9	S, P, DD, 2 A, 2 M/J/L	RGBA, CP	320 x 400 (32 colors) 640 x 400 (16 colors)	DD, MS, CC, NK	BAS, DOS, *Workbench*, utilities

Model/Manufacturer	Price	Warranty	Memory	Slots	Ports	Video Interface	Graphics Resolution	Hardware Included	Software Included
Apple IIGS Apple Computer, Inc. (408) 973-2222	$999	90 days	256K/8MB	8	2 S, DD, M, J, A	CP, RGBA	320 x 200 (16 colors) 640 x 200 (4 colors)	DD, MS, CC, NK	BAS, DOS, tutorial
Atari 520ST[FM] Atari Corp. (408) 745-2000	$599; ($799, color)	90 days	512K/4MB	None	S, P, DD, HD, 2 M/J, A, CR, MIDI	RGBA, TV, CP, mono	640 x 200 (4 colors) 640 x 400 (monochrome)	DD, MM, MS, NK	BAS, DOS, *GEM*, utilities
Atari 1040ST Atari Corp. (408) 745-2000	$899; ($1,099, color)	90 days	1MB/4MB	None	S, P, DD, HD, 2 M/J, A, CR, MIDI	RGBA, mono	640 x 200 (4 colors) 640 x 400 (monochrome)	DD, MM, MS, NK	BAS, DOS, *GEM*, utilities
Macintosh Plus Apple Computer, Inc. (408) 973-2222	$2,199	90 days	1MB/4MB	None	2 S, DD, HD, M, A	N/A	512 x 342 (b & w)	MM, DD, MS, NK	*Finder, HyperCard, System*, utilties, tutorial
Macintosh SE Apple Computer, Inc. (408) 973-2222	$2,769 ($129, keyboard)	90 days	1MB/4MB	1	2 S, DD, HD, 2 M, A	N/A	512 x 342 (b & w)	MM, 2 DD, MS, NK	*Finder, HyperCard, System*, utilties, tutorial
MS-DOS PC/XT COMPATIBLES: 5.25-INCH DRIVE MODELS									
Amstrad PC1512 DDM Amstrad (214) 297-4898	$899; ($999, color)	30 days	512K/640K 8MHz	3	S, P, J, M, L	MG, CGA	640 x 200 MG 640 x 200 CGA (16 colors)	2 DD, MM, CC, NK, MS	BAS, DOS, *DOS Plus, GEM Desktop, GEM Paint*,
Commodore PC 10-2 Commodore Business Machines (215) 431-9100	$1,110	1 year	640K 4.77MHz	5	S,P	MGH, CGA	720 x 348 MGH 640 x 200 CGA (16 colors)	2 DD, NK, RGB	BAS, DOS, *SideKick*
Epson Apex Epson America, Inc. (213) 539-9140	$900	1 year	512K/640K 4.77/8MHz	2	P, S (opt.)	CGA	640 x 200 CGA (2 colors)	2 DD, NK	BAS, DOS, *PFS:First Choice*
Epson Equity I Plus Epson America, Inc. (213) 539-9140	$1,095	1 year	640K 4.77/10MHz	5	P, S	None	n/a	DD, NK	BAS, DOS
Kaypro PC Kaypro Corp. (619) 481-4300	$1,595	1 year	768K 4.77/8MHz	9	P, S	MGH, CGA, EGA	640 x 200 CGA (2 colors) 640 x 350 EGA (16 colors)	2 DD, MM, CC, NK	BAS, DOS, *Polywindows, Word Finder, WordStar 4.0*
Leading Edge Model D Leading Edge Products (617) 828-8150	$1,095	15 mos.	512K/768K 4.77/7.16MHz	4	P, S	MGH, CGA	720 x 348 MGH 640 x 200 CGA (16 colors)	2 DD, MM, NK, CC	BAS, DOS, *Leading Edge Word Processor*
PC's Limited Turbo PC PC's Limited (512) 339-6800	$1,199	1 year	640K 4.77/8MHz	8	P	MGH	720 x 348 MGH (monochrome)	DD, HD, NK	None
Tandy 1000 EX Tandy Corp. (817) 390-3011	$599	90 days	256K/640K 4.77/7.16MHz	1	P, DD, 2 J, A (3-voice)	CP, CGA	320 x 200 CGA (16 colors) 640 x 200 CGA (4 colors)	DD, NK	BAS, DOS, *Personal DeskMate*
Tandy 1000 SX Tandy Corp. (817) 390-3011	$849	90 days	384K/640K 4.77/7.16MHz	5	P, 2 J, A (3-voice), L	CP, CGA	320 x 200 CGA (16 colors) 640 x 200 CGA (4 colors)	DD, NK, CC ($40)	BAS, *DeskMate II*, DOS
Vendex Turbo 888-XT Vendex (516) 773-3062	$995; ($1,295, color)	1 year	512K/768K 4.77/8MHz	7	S, P, M, 2 J, L	MGH, CGA	720 x 348 MGH (monochrome) 640 x 200 CGA (2 colors)	2 DD, MM, NK	BAS, DOS, database, spreadsheet, word processor
MS-DOS PC/XT COMPATIBLES: 3.5-INCH DRIVE MODELS									
IBM Personal System/2 Model 25 IBM (800) 447-4700	$1,350	1 year	512K/640K 8MHz	2	S, P, M, A	RGBA	320 x 200 (256 colors) 640 x 480 (2 colors)	DD, MM	Startup disk
IBM Personal System/2 Model 30 IBM (800) 447-4700	$1,695	1 year	640K 8MHz	3	S, P, M	RGBA	320 x 200 (256 colors) 640 x 480 (2 colors)	2 DD, CC, NK	Start-up disk
Tandy 1000 HX Tandy Corp. (817) 390-3011	$699	90 days	256K/640K 4.77/7.16MHz	3	P, DD, 2 J, A (3-voice)	CP, CGA	320 x 200 CGA (16 colors) 640 x 200 CGA (4 colors)	DD, NK, CC ($40)	BAS, DOS, *Personal DeskMate 2*
Tandy 1000 TX Tandy Corp. (817) 390-3011	$1,199	90 days	640K/768K 4/8MHz	5	S, P, 2 J, 2 A (3-voice)	CP, CGA	320 x 200 CGA (16 colors) 640 x 200 CGA (4 colors)	DD, NK, CC ($40)	BAS, DOS, *Personal DeskMate 2*
Zenith EaZy PC Zenith Data Systems (312) 699-4800	$999	1 year	512K/640K 7.16MHz	None	P, M	N/A	640 x 400 (monochrome)	DD, MM, NK	BAS, DOS, *DOS Manager*

CHART KEY & NOTES

Memory: Measured in kilobytes and megabytes (each K equals 1,024 characters; each MB equals 1,024 Ks), with both standard and manufacturer's maximum given. Speed is listed only for MS-DOS compatibles, since comparing how fast microprocessors run is most helpful only when computers run the same type of software.
Ports: S = serial; P = parallel; DD = disk drive; HD = hard drive; A = audio; J = joystick; M = mouse; L = light pen; C = cassette drive; CR = cartridge
Video interface: CP = composite; RGBA = RGB color (analog); RGBD = RGB color (digital); MT = monochrome text; MG = monochrome graphics; MGH = monochrome graphics/Hercules; CGA = color graphics adapter; EGA = enhanced graphics adapter; N/A Not applicable
Graphics resolution: Maximum graphics resolution is shown (in pixels, measured horizontally and vertically) with the available colors at that resolution. At lower resolution, more colors may be available.
Hardware included: DD = disk drive; HD = hard drive; MM = monochrome monitor; RGB = RGB color monitor; CC = clock/calendar; MS = mouse; NK = numeric keypad
Software included: DOS = appropriate disk operating system (MS-DOS, ProDOS, AmigaDOS, etc.); BAS = BASIC

SHOPPER'S GLOSSARY

(The terms are not listed alphabetically, because a better understanding of one term often results from reading the preceding information.)

MS-DOS TERMS

MS-DOS: The MS-DOS operating system, needed to use an IBM-compatible computer, has been updated many times. Some computers are sold with MS-DOS 2.11, but the latest version is MS-DOS 3.3. In general, the later the version the more flexible (however, MS-DOS 3.0 is considered "buggy" and ill-advised). GW BASIC is usually included on the MS-DOS disk. At purchase, make sure that MS-DOS is included with the computer; some manufacturers, including IBM, make it an aftermarket sale.

PC: Stands for Personal Computer, as in IBM PC, the model for many of today's compatibles. The IBM PC, which uses an Intel 8088 microprocessor is no longer manufactured. It came with 256K RAM and ran at 4.77MHz.

XT: After the IBM PC was established, IBM introduced the IBM PC XT, which uses the same 8088 microprocessor, but adds two important features: eight expansion slots instead of six and an increased power supply (130 watts), which allows use of a hard-disk drive.

AT: The IBM PC AT ("Advanced Technology") was the first computer to use the Intel 80286 microprocessor. The AT is faster than the PC and XT and can address more memory; its disk drives also can store more data.

Intel 8088: The microprocessor used in the original IBM PC and many other MS-DOS machines.

Intel 8088-2: A dual-speed microprocessor that's used in many MS-DOS machines and runs at 4.77MHz and 8MHz.

Intel 8086: From the same family as the 8088, the 8086 can run at three speeds (4.77MHz, 8MHz, and 10MHz) and is used in the IBM PS/2 Model 30.

Intel 80286: The microprocessor used in AT-type computers, the Tandy TX, and the new IBM PS/2 Models 50 and 60, the 80286 can address 16MB of RAM and can run at four speeds, the highest being 12.5MHz.

Intel 80386: The most powerful Intel microprocessor, the 80386 is at the heart of the IBM Personal System/2 Model 80, the Compaq DESKPRO 386, and the Tandy 4000. The chip is capable of multitasking (running more than one program at a time) and is lightning fast (up to 16 MHz). But it's also ahead of the software; there's no operating system that takes advantage of all its power.

Clock/Calendar: A battery-operated device built into many computers that automatically keeps track of the time and date, even when the computer is turned off. When you save a file, the c/c (as it's often referred to) will "stamp" the time and date in your directory, which is helpful in keeping track of your files.

Display Adapter: A special card required by the original IBM PC to send output to a monitor. You can buy a card for monochrome text, monochrome graphics (also known as Hercules Graphics), color graphics (CGA), or enhanced color graphics (EGA); some cards combine two or more display modes. Now, of course, many MS-DOS computers build some or all of these interfaces into the machine. But it's still important to know which ones you're buying, since software has specific display requirements. For instance, many applications require a Hercules graphics interface; many game and educational programs require a CGA.

CGA: A color graphics adapter, coupled with a color monitor, will display 16 colors (but only four at a time) at 320 x 200 resolution. The top resolution is 640 x 200 with two colors (although some manufacturers can get 16 colors at the same higher resolution).

EGA: An enhanced color graphics adapter, coupled with a compatible monitor, will display 16 colors simultaneously at 640 x 350 resolution.

Hercules Graphics: The Hercules monochrome graphics adapter gives resolution of 720 x 348 and is used by such programs as Lotus *1-2-3* to display pie charts and bar graphs on a monochrome monitor. Without such a card (or a color graphics adapter), you can only display text. The Hercules adapter is a standard, and many MS-DOS vendors incorporate "Hercules emulation" into their machines.

MOUSE TERMS

These terms can be meaningful not only for those looking to buy a mouse machine, but also for anyone who wants to run Microsoft's Windows *or Digital Research's* GEM *on their IBM PC or compatible (also for buyers of the Amstrad PC, which comes with* GEM*).*

Mouse: A hardware device used to move the cursor, as well as make on-screen choices. Depending on the computer, a mouse comes with one button (Macintosh and Apple IIGS) or two buttons (Amiga, Atari ST, and IBM PC). These are not the same as on-screen "buttons," which are defined below.

Icon: An on-screen symbol that represents a program, a document, the cursor, or a program's functions.

Graphic Interface: The general term for any human/software interface or operating system that uses picture symbols such as icons to control the computer. Also called a "graphical" interface.

Window: A bordered area of the screen in which a specific task (such as word processing) takes place. Also used for setting aside an area of the screen for controlling a program or making choices *(see "dialog box").*

Select: To choose or highlight text or icons by manipulating the cursor with the mouse.

Click: When you point the cursor by moving the mouse and pressing (one of) the mouse's button(s). This technique is often used for making on-screen choices.

Drag: To hold the mouse button down as you move the mouse. This technique is often used for selecting text or moving icons.

Button: On-screen objects, similar in function to actual push-buttons, used in making choices. A button may be round (like a real button), but it may be an oval, an arrow, or any other shape.

Dialog Box: A window specifically used for making choices that always contains text and one or more buttons. Also often contains a space for typing in needed information.

Menu: A list of commands, formats, fonts, and more available on-screen information. Software on mouse-based machines invariably has a row of menu labels running across the top of the screen. To choose from any one menu, you move the cursor to the label with the mouse. Then, depending on your computer, either the full menu drops down awaiting your choice, or you must pull it down first and then choose *(see "Drop-down" or "Pull-down").*

Drop-down or **Pull-down:** Depending on which mouse-based computer you're using, the menus across the top of the screen are either pull-down (the Macintosh, Apple IIgs, and Amiga) or drop-down (Atari ST, *GEM*, and *Windows*). The difference? When your cursor reaches the menu's label at the top of the screen with a drop-down menu, the menu appears. With pull-down menus, you must press additionally on the mouse button to make it appear. ■

How to Start A WORD PROCESSING BUSINESS

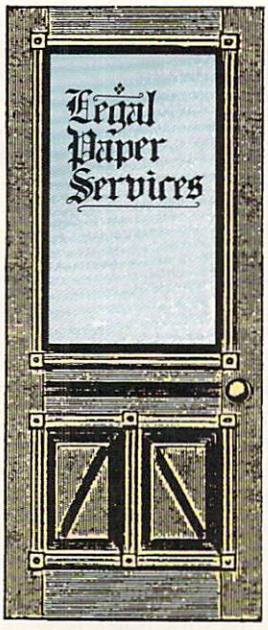
FIVE ENTREPRENEURS SHARE THE SAME SIX-PART FORMULA FOR SUCCESS

BY LIS FLEMING

Home-based word-processing services are springing up all over the country and turning personal computers into money machines for many entrepreneurs. Spare bedrooms, converted walk-in closets, and even entire family rooms are becoming home offices for people who've mastered their word-processing software and turned their computer skills into profitable businesses.

What are the secrets to starting a successful word-processing business with your computer? Beyond having the necessary skills and background to perform word-processing services, the rules for success are to (1) find a need and fill it; (2) target your market; (3) produce quality work; (4) provide quality service; (5) develop a backup system; and (6) be professional in performance and attitude. Whether your word-processing business will offer a full range of services or specialize in one field, the rules remain the same.

Five entrepreneurs who followed these rules in establishing their businesses have found that these guidelines made the difference between success and failure. They share their hard-won experiences with you.



ELIZABETH ROSENBERG

LEGAL PAPER SERVICES

Elizabeth Rosenberg has operated Professional Word Processing from her Queens, New York, apartment for three years. Using word-processing and typing skills gained from working at several law firms, Rosenberg decided to start a home-based business. Back-to-back walk-in closets were converted into a compact office for a computer and a printer.

FILL A NEED. Her business, Professional Word Processing, specializes in preparing papers for law students. When her husband began taking law courses at night, Rosenberg discovered that there was a need for fast and accurate word processing of student papers, especially contest papers on which three to four students collaborated. Her business cards, posted on bulletin boards at local law schools, and word-of-mouth referrals bring in enough material to keep her working full-time.

TARGET A MARKET. When Rosenberg became aware of the law students' needs for professionally produced papers, she zeroed in on that market, and Professional Word Processing was born.

QUALITY WORK. Providing quality work brings referrals and the opportunity to set higher prices. Because professors may penalize students for errors—no matter how small—many students insist that their papers be word processed. If errors are found, they can easily be corrected, and the entire paper can be quickly reprinted, error-free.

To produce legal papers, Rosenberg uses a Leading Edge Model D with a 30MB hard disk and an internal modem. Two daisywheel printers are attached to the computer and can print simultaneously. Her most recent acquisition is a brand-new laser printer. Rosenberg uses *WordPerfect* (WordPerfect Corp.) because it offers the features and flexibility important in producing legal papers, which often include complicated tables of authority.

QUALITY SERVICE. Professional Word Processing offers an unusual service. Because

LIS FLEMING, *of Davis, California, is a consultant specializing in telecommuting. She is executive director of the Association of Electronic Cottagers and author of* The Electronic Cottage Handbook.

HAND LETTERING BY JAMES MONTALBANO

SIX SECRETS OF SUCCESS

1. FIND A NEED AND FILL IT.
2. TARGET YOUR MARKET.
3. PRODUCE QUALITY WORK.
4. PROVIDE QUALITY SERVICE.
5. DEVELOP A BACKUP SYSTEM.
6. BE PROFESSIONAL.

many joint-project papers—called contest papers—are brought in at the last minute, Rosenberg may find three students camped out in her living room while a fourth sits beside her as she assembles the final paper. Clients sometimes baby-sit Rosenberg's 3-year-old son, Jordan, during what can become all-night sessions. Work often takes on a family spirit, and there is a sense of pride for everyone involved when contest papers place as winners.

To ensure that clients have a clear understanding of the product, Rosenberg has developed a number of useful business forms. A work-order form describes the finished product and price, and a client contract covers both company and client responsibilities (both are signed by the client and Rosenberg). There is also a company price list. Copies of all three documents are available on-line in Data Library 7 of the Working From Home Forum on CompuServe (GO WORK).

BACKUP SYSTEM. Rosenberg finds backup help through the local temporary service where she was formerly employed. For professional networking support, she strongly recommends the Working From Home Forum (she is section leader of the word-processing area) and the WordPerfectionists support group, also on CompuServe. On-line support is especially important in areas such as New York, where competition is fierce and competitors may not be willing to provide pricing information, referrals, or backup service.

PROFESSIONALISM. To Rosenberg, professionalism means providing quality products and services, pricing her services at the middle and upper ranges, and conducting transactions with customers in a clear-cut fashion. During the full-time season, her business can bring in $800 a week. Her method of setting prices can be found in the article "Setting Prices for Word-Processing Services" in Data Library 7 of the Working From Home Forum.

ADVICE FROM THE ENTREPRENEURS

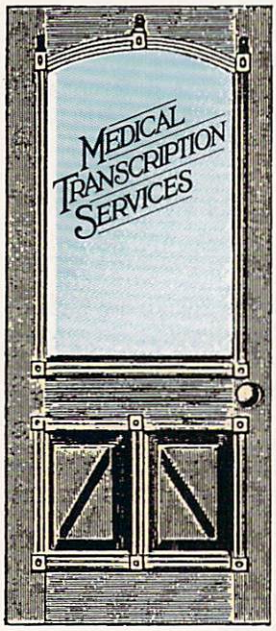
Vicki Fite: "Consider your business a 'real' business. Be professional. A poor product can cause you to lose business referrals."

Elizabeth Rosenberg: "Don't set your prices too low. Start in the middle and raise your prices as you become more proficient."

Melissa Craig: "There is no substitute for personal service."

Nancy Eifert: "Begin by taking a word-processing course at a local community college or high school. Buy the best system with the largest amount of memory that you can afford."

Katie Allegato: "Working at home takes a lot of self-discipline."



VICKI FITE

MEDICAL TRANSCRIPTION SERVICES

Vicki Fite has owned and operated a medical transcription service, Southwest Transcription Center, in San Diego, California, for almost 10 years. To establish her business, Fite drew from her experience in the medical field, in which she's worked since high school.

In the beginning, Fite moonlighted as a transcriber at home, while she continued to work at the hospital. After the first year, she took the plunge and turned her part-time business into a full-time home-based enterprise. Now Fite is running her business from an office in town so that she can be closer to her company's employees.

FILL A NEED. Now that she has established her own transcription service, she collects the tapes on which the doctors have recorded patient information and transcribes that information into typewritten form. This is a task that requires a strong background in medical terminology and hospital practices.

TARGET A MARKET. Southwest Transcription began by targeting its market to hospital transcription in the San Diego area. (One of its clients is the San Diego Navy Hospital, the nation's largest military hospital.) As a result, her company has little need to advertise its services. Word-of-mouth referrals provide as much work as her staff can handle.

QUALITY WORK. Fite works hard to find employees who have the necessary background to produce quality work. On the average, Fite employs 10 people full-time, including three people who work in the office and additional transcribers who work from their homes. She could provide work for five more people if she knew where to find qualified medical transcribers. Fite does all the printing of the transcripts herself, partly as a quality-control measure, since accuracy is such an important factor in medical transcription.

QUALITY SERVICE. Meeting deadlines is an absolute necessity in hospital transcribing. One example of the urgency revolves around hospital reports that must be finished the same day. Fite has the transcribers pick up tapes from her office every morning. Each afternoon, an employee collects tapes and disks from the transcribers' homes and takes them to Fite for printing and delivery to the hospital. For other kinds of jobs, the transcribers themselves deliver their work to Fite for printing.

Meeting deadlines is where computer equipment makes Fite's service competitive. Many medical transcription services still use typewriters. The computer's speed is a big plus, allowing transcribers to complete 1,800 lines a day. The company now has one IBM PC and four compatibles. The transcribers use *WordPerfect* and IBM's *Writing Assistant*. One home transcriber transmits work via modem to Fite's computer, allowing for even faster turnaround. Fite also has established modem transmission directly to Community Hospital of Chula Vista, further speeding delivery and increasing productivity.

Closely connected to quality service is competitive pricing. The company charges 12 cents per line for medical transcription. (Her

employees earn about half this rate.) Rates are reported to be 15–16 cents per line in the Los Angeles area. Fite attributes the lower San Diego rates to a generally lower wage scale in the area. Fite estimates that it's possible for a top-notch medical transcriber-entrepreneur to earn $45,000 per year running an independent business. A self-employed transcriber working alone could earn $25,000–$30,000.

BACKUP SYSTEM. Fite has an office manager who can take over when she's not available. Since employees take turns working in the main office, all are familiar with routine business procedures and can work together in any combination.

PROFESSIONALISM. Considering your home-based business a "real" business is an absolute must, according to Fite. She is a firm believer in producing professional work and charging competitive prices for her services. Client referrals testify to the quality of Southwest Transcription Center's services.

KATIE ALLEGATO

WORD PROCESSING PLUS

Katie Allegato has operated Allegato & Associates in Kissimmee, Florida, for the past two and a half years. She began her venture in an office in a spare bedroom but moved to town when the company expanded to provide mailing-list maintenance, word processing, and computer and software training for small businesses. Allegato's experience in accounting and a growing love for experimenting with computers and software enabled her to start the business.

FILL A NEED. Allegato first became aware of the need for computer services when asked to do a company's accounting as an outside service provider. During her many visits to the local computer store, she became acquainted with the dealer who now provides her with many referrals. Allegato, in turn, reviews software for the store. As the computer dealer discovered local needs through conversations with customers, Allegato & Associates began adding to its list of services.

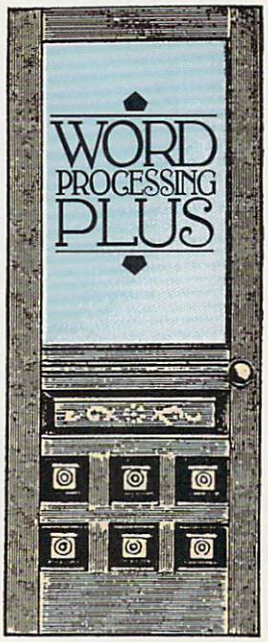
TARGET A MARKET. The company's market is targeted to the local geographic area. Only limited advertising is necessary since referrals come from the computer store and satisfied clients. Most services are geared for small businesses on limited budgets, such as restaurants, gift shops, building contractors, and land surveyors.

QUALITY WORK. Allegato attributes the quality of her product to a love of what she's doing. Her fascination with computers leads her to find the best software for the job. The company has three Leading Edge Model D computers and four dot-matrix printers (three Panasonic and one Epson) with near-letter-quality capabilities. Her next major purchase will be a laser printer. She uses the word-processing software that came with the Leading Edge because of its ease of use, even though it doesn't have all the bells and whistles. She also uses Software Publishing's *First Publisher* and Lotus *1-2-3*.

QUALITY SERVICE. Her company offers various services and will come to the client's place of business to provide computer training. Pickup and delivery services are also available. Although she often works overtime, her normal business hours are 9:00 a.m. to 6:00 p.m.

BACKUP SYSTEM. Because Allegato & Associates has two full-time employees and one part-time home-based independent contractor who has her own equipment, there is always someone available to meet client needs. Allegato's 17-year-old son, Michael, also will pitch in at times to do some data-entry work.

PROFESSIONALISM. Running a business requires discipline. Allegato knows that when she's working at home, she can't take time out to do housework. Although her company is presently headquartered in town, she's going to move it home again to larger quarters—the garage, which evolved first into a family room, now will become an office.



NANCY EIFERT

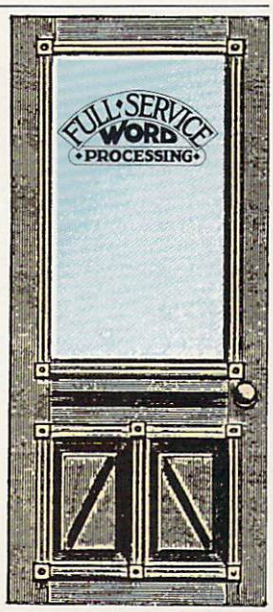
FULL-SERVICE WORD PROCESSING

For the past two years Nancy Eifert has operated Eifert's Word Processing Service from converted kitchen space in her Baltimore, Maryland, home. Capitalizing on her 12 years of experience with Kelly Services and her English and accounting education, she began a full range of secretarial services with her Tandy 1000.

FILL A NEED. Eifert realized that some of the smaller, local businesses could benefit from secretarial-type work—either because of their shortage of manpower or because of the expenses.

TARGET A MARKET. The company's customer base consists of small, local businesses. With business cards in hand, Eifert began by running ads and making personal calls to those businesses, explaining her services. She has now established a base of steady clients and plans her scheduling and marketing around their needs. For example, during the times when her steady clients have heavy seasonal demands, Eifert doesn't advertise. At slower times, she places ads in local papers to attract additional work, such as resume formatting.

QUALITY WORK. Eifert offers quality in a whole range of products including form letters, resumes, proposals, reports, fliers, announcements, bulletins, banners, newsletters, and databases. She also does mailings and stuffs envelopes. Now she uses a Panasonic Business Partner with a 20MB internal hard disk and two floppy drives, an IBM compatible, and two printers—a Canon PW 1156A dot-matrix printer (for database, graphics, and mailing-list work) and a Tandy daisywheel printer (for letters and resumes). Eifert highly recommends her software, *Professional Write* and *Professional File* (both by Software Publishing Corporation). She has recently purchased a desktop-publishing package, *First Publisher*, from

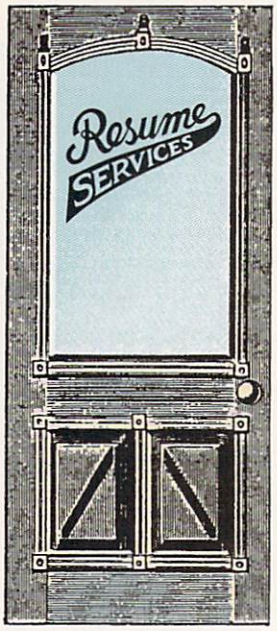


the same company, and *Newsmaker* (Unison World) to produce newsletters.

QUALITY SERVICE. Eifert's Word Processing Service schedules time for its steady clients, ensuring them service when they need it. The company also offers a holiday-banner service. On these special occasions, banners with holiday messages printed on colored paper are sent to veterinarians' clinics, doctors' offices, and classrooms. She also provides editing if a client's material needs special attention.

BACKUP SYSTEM. In this case, backup help is a family affair: Eifert's husband and mother often help when things become hectic.

PROFESSIONALISM. To Eifert, being professional means providing yourself with the right tools to do a professional job. Computer equipment and programs that deliver speed, expandability, and ease of use are important to the business.



MELISSA CRAIG

RESUME SERVICES

Melissa Craig operated A. Craig Jordan Co., a career-resume and public-relations business from her Davis, California, apartment for a year before dividing her business and moving part of it into downtown space. Now she runs the public-relations and advertising services out of the downtown office and the resume service from her home. Craig used her years of experience in public relations with various firms to help establish her own business.

FILL A NEED. Craig saw a need for good, productive resumes that reflected careful and professional career counseling.

TARGET A MARKET. Craig began offering resume services to local university students by advertising and running coupons in the student newspaper. Soon word-of-mouth referrals began to take over, and requests for resume services came from university management and, later, from the management of local private enterprises.

QUALITY WORK. Quality resumes are a must because they present the client to prospective employers. Skills, experience, and education must be professionally conveyed in print.

To provide high-quality resumes, Craig uses a Macintosh 512K computer. *MacWrite* word-processing software is used in combination with *MacDraw* graphics software (both from Apple Computer) to produce excellent results. Resumes are laid out in an attractive format, often with a border and typeset lettering. A laser printer produces camera-ready copy on glossy paper. The client then takes the glossy to a local copy shop and has resumes and cover letters copied on textured stationery with matching envelopes.

Craig uses *RESUME* (North American Infonet), a program that offers a range of options; she believes that it saves time and provides helpful guidance in creating resumes. But she cautions that the software must be used *along with* (not in place of) consultation.

QUALITY SERVICE. There is no substitute for the time needed to focus on the client's skills and experience. Craig allots at least two hours for each resume. Two 30-minute sessions are spent consulting with the client. One session takes place during the first meeting with the client. The second session is held to review the final draft of the resume before the camera-ready copy is produced.

Her competitive price for resume services in the local area is $80 (including a $25 nonreturnable deposit). For an additional fee, cover letters addressed to each prospective employer are prepared with the resumes.

BACKUP SYSTEM. A. Craig Jordan Co. uses an independent sales representative who can double as a backup when the need arises.

PROFESSIONALISM. To Craig, professionalism means presenting a professional image both in attitude and dress. It means providing quality service at all times and striving to expand and improve her services.

A FINAL WORD

Does all this sound like a lot of work? It is! Entrepreneurs report that starting and running a business turns out to be more work than they ever anticipated. Those who succeed also report that they would do it all over again. All of the word-processing entrepreneurs sharing their experiences here became enthusiastic and energetic when talking about their businesses. That brings us to the final rule for success—*you must enjoy what you do!* ■

RESOURCES FOR WORD-PROCESSING BUSINESSES

ORGANIZATIONS

* National Association of Secretarial Services (NASS), 100 Second Ave. South, Suite 604, #17, St. Petersburg, FL 33701; (813) 823-3646 or (800) 237-1462; Dues: $120 per year; Newsletter: *NASS Newsletter*

* Professional Typists/Word Processors Network, 6399 Wilshire Blvd., Suite 119, Los Angeles, CA 90048; (213) 651-1479; Contact: Fran Brevig

* Sacramento Professional Typists Network, 9113 Sherrilee Way, Orangevale, CA 95662; (916) 989-2661; Contact: Janice Katz

ON-LINE SUPPORT GROUPS

* Working From Home Forum (CompuServe, [GO WORK]), Data Library 7, Word Processing; Data Library 10, Association of Electronic Cottagers (AEC)

* WordPerfectionists (WordPerfect User Group), On-line help and support on CompuServe; Newsletter

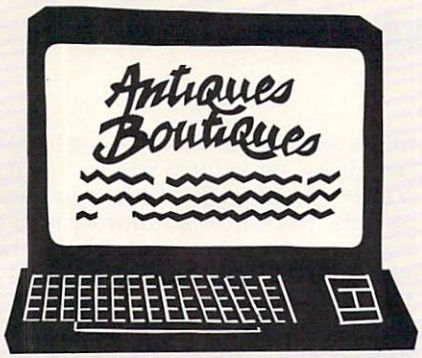
PUBLICATIONS

* *The Electronic Cottage Handbook* by Lis Fleming; P. O. Box 1738, Davis, CA 95617-1738; $6 plus $1 shipping

* *The Work-at-Home Source Book* by Lynie Arden; Live Oak Publications, 1987; available in bookstores; $12.95

* *Working from Home* by Paul & Sarah Edwards; Jeremy P. Tarcher, Inc. 1987; available in bookstores; $12.95

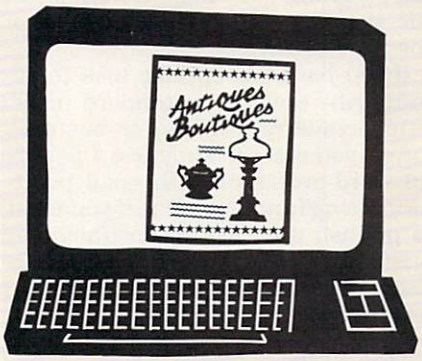
* *The Worksteader News* by Lynie Arden; P.O. Box 820, Rancho Cordova, CA 95741; $24/year



A GUIDE TO DESKTOP PUBLISHING

ANSWERS TO MOST COMMONLY ASKED QUESTIONS, A GLOSSARY, TIPS ON CREATING A ONE-PAGE NEWSLETTER, AND MAC AND MS-DOS SOFTWARE REVIEWS

BY STEVE MORGENSTERN AND NICK SULLIVAN



Desktop publishing—using a computer as the primary workstation for publishing—is a beguiling term that can make a complex and labor-intensive process sound simple. As with any serious computer application, desktop publishing requires a smooth blending of software and hardware, under the orchestration of a seasoned user. When all systems are in place and working, desktop publishing can be a marvel. One person, bypassing the many assistants required in the publishing process, can churn out professional-quality documents that are fit to be printed and distributed to the world. In a nutshell, here's how it works:

The process of publishing involves three major steps: (1) assembling text, pictures, and charts; (2) arranging them in a visually pleasing, camera-ready mechanical; and (3) printing for mass distribution.

STEVE MORGENSTERN *is a contributing editor and* NICK SULLIVAN *is a senior editor of* FAMILY & HOME-OFFICE COMPUTING.

The computer is a perfect tool for the first two steps. You can take text and graphics files from different sources and arrange them in columns on the screen. You can use a scanner to "read" a photograph or illustration into the computer and add that image to your layout. You can change the typestyles and type sizes; you can edit text, size the art, and otherwise manipulate objects onscreen until you like what you see. Then you can laser-print the results and use that printout as a mechanical for further mass printing.

The computer, however, is not so good for the third step. You *could* use your computer to print 1,000 or 10,000 copies of a book or newsletter, but it's not an efficient method. More likely, you'd take your laser-printed mechanical to be photocopied or professionally printed.

Nonetheless, the ability to perform the tasks of a typesetter and a graphic artist with the aid of a computer makes desktop publishing an alluring enterprise. Since *PageMaker*, the popular desktop-publishing package, was brought out for the Macintosh in 1985, thousands of desktop-publishing programs and laser printers have been sold.

Corporations use computers to assist in designing promotional materials; newspapers and magazines for layouts; computer users' groups and churches for newsletters; restaurants for menus; theaters for programs; and so on. And for many individuals, desktop publishing provides a business opportunity. These entrepreneurs can produce newsletters, brochures, and even books for companies and institutions that are trying to save on traditional publishing costs.

Before you rush out to buy desktop-publishing software and a laser printer—in addition to a computer, the two key components of a desktop-publishing system— browse through this four-part guide (Questions Commonly Asked, Glossary, How To Create a One-Page Newsletter, and Software Reviews). To start, we answer some of the most commonly asked questions.

ILLUSTRATION BY JACQUELINE CHWAST

QUESTIONS COMMONLY ASKED

Q: What can I do with desktop-publishing software that I'm unable to do with my word processor?

A: Desktop-publishing software allows you to freely mix text and graphics in a multiple-page document and gives you a large degree of control over the design of these elements. While some of the more advanced word-processing programs, such as Microsoft *Word* on the Macintosh, allow you to mix text and graphics, they don't allow the fine design control that most professional desktop-publishing packages do.

Second, this kind of software accepts files from more outside sources than the average word processor. Finally, all desktop-publishing programs take more advantage of the graphics and textual abilities of the laser printer.

If you have one specific task to accomplish—such as a standard newsletter, restaurant menu, or business form—you can certainly use a powerful word-processor with good print-formatting functions. But if you want to publish a variety of documents—business reports and forms, advertisements and promotional material, restaurant menus, theater programs, invitations, resumes, fliers, tickets, posters, charts, and package designs—in various forms, desktop-publishing software is your best bet.

Q: What's a laser printer, and do I need to buy one?

A: Mechanically, a laser printer works very much like a photocopier, except that the placement of black toner is controlled by a laser beam, which in turn is controlled by your computer. Most popular laser printers offer a resolution of 300 dots per inch (dpi). This compares favorably, say, with a resolution of 70 dpi for an Epson FX-80 dot-matrix printer in draft mode, but does not match the output of professional typesetting equipment, which can range from 635 dpi to 2,540 dpi.

A laser printer is the printer of choice in a classic desktop-publishing system because its output can be used directly as a master for quantity printing. Some laser printers include PostScript (*see next question*), which translates the computer's codes into printed matter.

While the new 24-pin dot-matrix printers (and the 27-pin Apple ImageWriter LQ) produce superb output, they don't support PostScript. However, for many projects, a 24-pin printer fits the bill, and it's also a cost-effective proofing system. If you use desktop-publishing software only occasionally, you may find that using 24-pin printers is a good solution.

Here's a typical hardware setup for desktop publishing. From left to right: an Apple LaserWriter printer, a digital scanner (on top of printer), a large-screen monitor (useful for viewing a whole page or a spread at one time), a Macintosh SE, and a hard-disk drive (beneath the SE). On the screen is a page from *Whale Song*, a book produced with this equipment.

Basic list prices for laser printers range from $2,500 to $5,000, with discounted prices as low as $1,700. However, you don't necessarily have to buy a laser printer to use one. Many copy shops and service centers will print your desktop-publishing files for as little as $1 a page (as compared to approximately $15 for typesetting). And many typesetters will accept disks or files sent by modem, and print them on laser printers or typesetting machines.

Q: What is PostScript?

A: PostScript, a language used to control some printers, makes it easy to change the size and style of type. PostScript is built into the Apple LaserWriter printers, and IBM has also announced its support of PostScript, so the language now appears to be an established standard.

PostScript offers several advantages to a desktop publisher. Most important are its abilities to enlarge or reduce type and graphics smoothly and to create special typographic effects. With a PostScript printer, you can quickly change typestyles. With non-PostScript printers, you may have to add new font cartridges or load new fonts from disk. The latter method takes time and may require additional memory in your printer.

PostScript can also be used to drive professional Linotronic typesetting equipment (the models 100 and 300). For those occasions when a laser printer's 300 dots per inch is not fine enough, you can take your disk to a professional typesetter and have the page printed out with up to 2,540 dots per inch resolution.

Unfortunately, PostScript has its price—about $2,000. That's the difference between a PostScript-equipped laser printer such as Apple's LaserWriter Plus and a non-PostScript printer such as the Hewlett-Packard LaserJet Series II; each of these printers produces printouts at the same 300 dpi resolution. And PostScript can slow down the printing process, a small price to pay for the added flexibility.

Q: What's a scanner, and do I need to buy one?

A: Scanners translate graphics and photographs on paper into files the computer can display and incorporate into your desktop-publishing documents. Scanners are usually stand-alone units that are connected to the computer; documents are placed flat and read into the computer. But a few scanners replace the ribbon on printers and read documents that move through the printer.

These scanners, such as ThunderScan ($249 for the ImageWriter) and the Epson Image Scanner ($300 for the Epson LQ 2500, EX 800, and EX 1000) are considerably slower than stand-alone units. But they are much less expensive, and the quality is good. Prices for scanners can climb to more than $2,000.

If you plan to use your desktop-publishing setup extensively for graphic arts applications, a scanner could be justified. But many desktop-publishing service centers will scan your graphics and put the file on your disk for a modest fee.

In some cases, the old-fashioned method of manually pasting graphics onto your pages may also be preferable to scanning if you feel confident with the procedure. There's no law that says a desktop publisher is limited to computerized graphics.

If you are using photographs, the pasteup method may be preferable. A professional printer can reproduce photographs (with much higher resolution than those generated by desktop scanners) and put them into position on your computer-generated page layout. And if you want to incor-

porate color photos into your document, you'll have to supply your printer with color separations, which can't be done easily with a scanner or a computer.

Q: Which system—Macintosh or MS-DOS—is better to use for desktop publishing?

A. On the surface, the Macintosh is a stronger system. The Macintosh is a graphics-oriented computer, and desktop publishing is a graphics-oriented application. Because so much software adheres to the same graphics formats, importing files from different software, using clip art, and printing fonts with the Macintosh are easier than with an MS-DOS computer. Finally, desktop publishing has been a reality on the Macintosh for over two years, so there's more good software available for it; and all Mac desktop publishing programs support the LaserWriter printer and PostScript.

Nonetheless, many users can't discern much difference between *PageMaker* running on the Macintosh and *PageMaker* under MS-DOS. (*PageMaker* is the only desktop-publishing program that's available on both machines.) The real difference between the two systems is that the standard IBM PC needs several upgrades to run smoothly, whereas the Macintosh is ready to go. For instance, some MS-DOS programs run under Microsoft *Windows*, and some run under GEM—neither of which is native to the machine.

To get the best performance in the MS-DOS world, you should add an accelerator board to a standard IBM PC or compatible or use an AT-compatible. In either case, you'll also have to add a mouse and a graphics adapter to the system. If you want to use color, an enhanced graphics adapter (EGA) is far superior to the standard color graphics adapter (CGA), which can be fuzzy for text.

If you choose the MS-DOS route, you have a world of choices. IBM is selling a desktop system based on its Personal System/2 Model 30. Epson, Kaypro, AST, and other computer manufacturers also sell complete "turnkey" systems, with computer, software, and laser printer.

Q: Can I use my Amiga, Atari ST, or Apple II for desktop publishing?

A: Yes and no—it depends on how you define desktop publishing. You can produce a newsletter with any of these computers. But you may not have the wide range of graphics capabilities, layout flexibility, or laser-printing options than you can get with Macintosh or MS-DOS computers. So far, professional-quality desktop-publishing software has been limited to the Macintosh and MS-DOS worlds.

This may be changing—we have seen two desktop-publishing packages for the Atari ST series (*see review of Publishing Partner in the October issue*) and talked to developers about upcoming Amiga and Apple II products (such as *The Professional Page* for the Amiga or *Springboard Publisher* for the Apple II).

If you're setting up a system specifically or primarily for desktop publishing, look at the Macintosh or an MS-DOS machine. If you have another computer and want to produce a newsletter, flier, or brochure, you can certainly find the software to do this.

DESKTOP-PUBLISHING GLOSSARY

Automatic Hyphenation: This feature automatically inserts hyphens in words at the end of lines to produce text that fits better, therefore avoiding large spaces between words.

Camera-ready: A page layout, also called a mechanical, that is fully prepared for the printer.

Clip Art: A file of ready-made graphic images that can be used in a desktop-publishing document.

Crop Marks: Corner indicators that show the size an illustration, photograph, or page should be printed.

Downloadable Soft Fonts: Type fonts on disk that can be added to a laser printer's memory.

DPI: Stands for "dots per inch." In general, the more dpi in a printer's output, the finer the resolution of the printout.

Font: Each typestyle, in a specific size and weight, is called a font. The style itself is called a typeface. For example, Times Roman is a typeface—12-point Times Roman bold is a font.

Flowing Text: Text that is automatically placed in columns and/or pages by desktop-publishing software, as opposed to text you place manually.

Frames: Boxes or rectangles of thin lines that provide borders for blocks of text or pictures.

Greeking: The process in which the program will use dummy type (called *Greek*) whenever type appears too small on-screen to be legible.

Guides: On-screen markers, based on a set of coordinates, indicating where a piece of text or art should go.

Justify: To set lines of type against the left margin (left justified), right margin (right justified), or both (flush justified).

Kerning: The process of removing the extra space between certain letter combinations, such as To or Ye, to make them look better.

Leading: Pronounced "ledding." The amount of space between lines of text. Leading affords a finer degree of control than single-spacing or double-spacing; it's often used as a supplement to it.

Mechanical: (*See* camera-ready *above.*)

Pica: A typographic unit of measurement equal to one-sixth inch. The width of typeset columns is traditionally measured in picas.

Point: A typographic unit of measurement equal to 1/72 inch—there are 12 points in a pica. The height of type is measured in points. You are reading eight point type.

Rules: Lines of varying thickness used to separate columns of text or any other elements in a layout.

Spread: Two facing pages in a publication that are designed as a single entity.

Style Sheet: In desktop publishing, a file containing a combination of type specifications, layout rules, and formatting codes necessary to produce a certain document.

Thumbnail: A set of small sketches used when designing a publication to show the general arrangement of art and text on each page.

Tiling: A feature in desktop-publishing programs that allows you to print publications larger than your printer's maximum page size, by printing and pasting sections together.

Tracking: The process of removing space between all letters, in contrast to kerning, which controls the space between selected letter combinations.

Wrapping Text: Fitting text around graphic images. Many desktop-publishing programs will automatically wrap text around rectangular picture blocks—only a few (notably, *Quark XPress*) will wrap text around irregularly shaped graphics.

WYSIWYG: Pronounced *wizzy-wig*. Stands for What You See Is What You Get, meaning that the on-screen display will be faithfully sent to the printer and reproduced.

HOW TO CREATE A ONE-PAGE NEWSLETTER STEP-BY-STEP

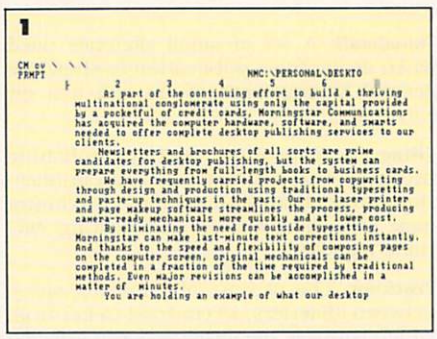
BY STEVE MORGENSTERN

EDITOR'S NOTE: *When Contributing Editor Steve Morgenstern isn't busy writing for* FAMILY & HOME-OFFICE COMPUTING, *he runs Morningstar Communications, which provides editorial services for business clients. He recently expanded these services to include desktop publishing. How could he let his clients (and prospective clients) know about his new desktop-publishing setup? The answer was obvious—send out a newsletter! Here's how he did it. These basic steps can be used to create a range of documents.*

1. Use Your Word Processor to Write Text. Write text with your favorite word-processing program—in this case, *XyWrite III Plus* on an MS-DOS computer. *Ventura Publisher*, the desktop-publishing package I used, accepts *XyWrite* files without problems. With some word processor/desktop-publishing software combinations, you will have to save your files in ASCII format, which means you'll lose any formatting commands.

It's often a good idea to save each headline and each article in a separate file, since they will be printed in different type sizes and styles. Alternatively, you may choose to type the headlines directly onto the page layout using the text-handling capabilities of your desktop-publishing software.

1



As part of the continuing effort to build a thriving multinational conglomerate using only the capital provided by a pocketful of credit cards, Morningstar Communications has acquired the computer hardware, software, and smarts needed to offer complete desktop publishing services to our clients.

Newsletters and brochures of all sorts are prime candidates for desktop publishing, but the system can prepare everything from full-length books to business cards.

We have frequently carried projects from copywriting through design and production using traditional typesetting and paste-up techniques in the past. Our new laser printer and page makeup software streamlines the process, producing camera-ready mechanicals more quickly and at lower cost.

By eliminating the need for outside typesetting, Morningstar can make last-minute text corrections instantly. And thanks to the speed and flexibility of composing pages on the computer screen, original mechanicals can be completed in a fraction of the time required by traditional methods. Even major revisions can be accomplished in a matter of minutes.

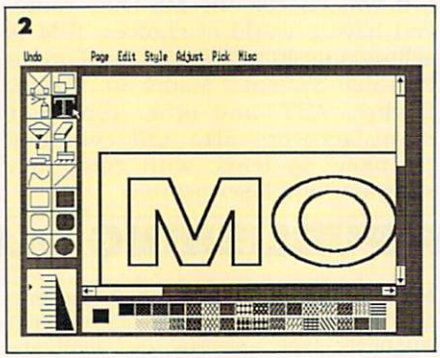
You are holding an example of what our desktop

One more word-processing tip: Ordinarily, you insert two spaces after the end of each sentence. This is not good form in typesetting. Either single-space or use your word processor's search-and-replace function to remove the extra spaces before moving on to your desktop-publishing program.

2. Create and Gather Art. There are several possibilities for gathering artwork to include in your publication. You could find a talented artist who works on the computer. You could take art created on paper and transfer it to the computer using a scanner *(see "Questions Commonly Asked")*. Here I used a piece of clip art—a handsome image of a computer provided with the *GEM Draw Plus* program—in combination with another image.

The second image is a shot of an actual screen from *Ventura Publisher* and was created using a superb piece of software called *Publisher's Paintbrush* (ZSoft, [404] 980-1950). It includes a utility called FRIEZE that can capture any graphic image you put up on your screen (from *any* program), alter it, and print it from *Publisher's Paintbrush*. That's how I got my screen shot. I used the same graphics program to create the newsletter logo.

2

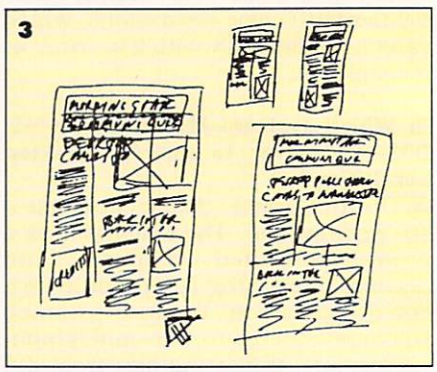


The third illustration on the page was drawn by a young artist using *PC Paint*. Unfortunately, *Ventura* won't accept *PC Paint* files, so I had to use the FRIEZE function again.

Whether you're working with an MS-DOS or a Macintosh system, try to use an object-based drawing program (such as *GEMDraw* or *MacDraw*) rather than a bitmap graphic program (like *PC Paint* or *MacPaint*). Object-oriented programs define images as sets of lines, rather than as sets of dots. This lets you freely change the size of your graphic, and still maintain a smooth image that will print using your printer's full resolution.

3. Make Rough Layout Sketches on Paper (Thumbnails). After text is written and graphics are ready, it's time to design a layout—using pencil and paper. Resist the temptation to move right to the computer. You'll get better results if you begin with a set of small thumbnail sketches, then go on to draw larger versions of (promising) designs. You can always adjust sizes and add finishing touches on the computer, but a rough sketch is an important first step.

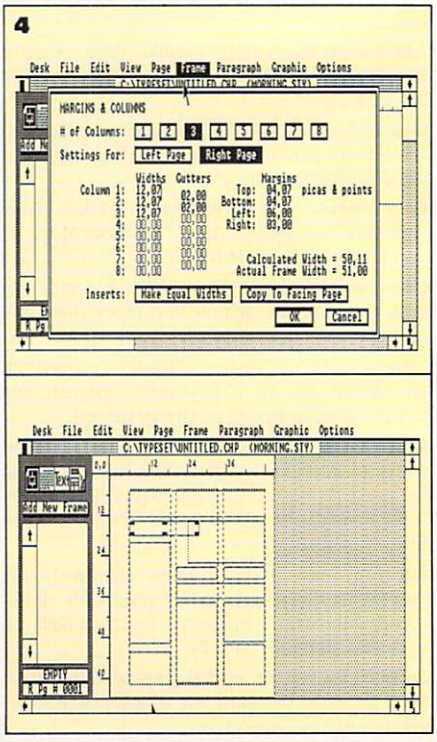
3



Keep your eyes open for professional examples you can use for inspiration. Many desktop-publishing programs come with sample files you can study and adapt to your needs.

4. Lay Out a Page on the Computer. Finally it's time to load your desktop-publishing software and design the page. The first step is to create a set of columns and, within those columns, rectangular boxes to hold your

4



text and graphics (in *Ventura* these are called frames).

The column guidelines are placed on-screen using a page setup dialog box which asks for page size, margins, and number of columns. Frames are then created with your mouse, by dragging a box from the top left to the lower right corner of the rectangular frame you want. You don't have to build the frames perfectly the first time—you can keep adjusting the size and shape until you get it right, even after you've placed your text or graphics inside.

5. Put Text and Graphics on the Page. Place your prepared text and graphic files in the appropriate frames, then assign type specifications to each text section. Crop and size the graphics until they fit well in the space available. Next, juggle, adjust, edit, and fine-tune until everything reads and looks right.

Some of this work can be done on-screen, but don't hesitate to print out frequent samples as the page develops (as shown here). It's much easier to proofread text on paper and to get an overall view of how the page looks when you have a full-page printout in your hand.

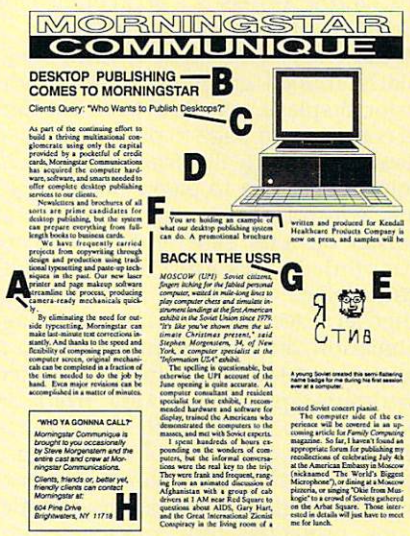
The program breaks the text automatically with hyphens to improve the spacing of justified lines. Sometimes the results are technically correct but don't look right—such as breaking the word *op-portunity* between two lines. You can adjust these odd breaks by editing on-screen.

You can correct misspellings and edit the text from within the desktop-publishing program without returning to your word processor. Keep in mind, though, that some programs let you export these corrections back into the original word-processing file (*Ventura* does, for example), and others make the change only in the publishing file and leave the original untouched. If you will need to update your word-processing file manually, keep a copy handy and mark any changes and corrections you make for future reference.

A. *This is a widow—a single word (or part of a word) that is left on its own at the end of a paragraph. You can either bring down a word from the line above or edit the sentence to eliminate the widow and improve the layout.*

B. *This headline type is too small—it should be bigger. Also, there is too much space between the T and the A in "MORNINGSTAR"—we'll use manual kerning to tighten it up. We'll also add a little space between the K and the T in "DESKTOP"*

5



C. *Will this look better if we italicize the quoted section? We'll try changing it—if we don't like the italicization, we can easily change back.*

D. *We don't have enough room for this story now, but there's a big hole next to the computer illustration. Wrapping the text around the picture will eliminate the problem.*

E. *This picture is floating in space—we'll draw a box of rules around it.*

F. *A rule between the columns and another separating the second two columns of the lead story from the second headline will improve the appearance and the readability of the page.*

G. *We could use a subhead for this article. It can be typed directly onto the page layout.*

H. *We can add a tint background to this box, setting it apart from the rest of the page.*

Right now our computer illustration has a blank screen—we want to include the captured image of our desktop-publishing program. To do this, we create another small frame and fit it inside the screen of the computer illustration. Then we'll bring in our captured screen image and size and move it until it fits just right.

6. Laser-Print Your Final Product. *Voilà!*—the finished newsletter. If you only need a hundred copies or so, you can print them on your laser printer. If you need more, a local copy shop or quick printer can turn out a crisply printed stack from your sharp laser-printed original.

6

DESKTOP-PUBLISHING SOFTWARE

BY STEVE MORGENSTERN

Professional desktop-publishing software, which generally starts at $300, has several characteristics that set it apart from the wide range of print programs on the market, such as *The Print Shop*; from simple newsletter generators, such as *The Newsroom*; and from word-processing packages with advanced print formatting and graphics features, such as Microsoft *Word*.

First and foremost, desktop-publishing software is page-layout software that allows you to move text and pictures—imported from a wide range of sources—around the screen as if they were objects. Second, desktop-publishing software includes drivers for laser printers, which are a key part of the classic desktop-publishing system. Finally, desktop-publishing software includes sophisticated typographic control, allowing you to fine-tune the amount of space between lines and characters, as well as the size and style of your text and graphics.

Virtually all of the professional-level desktop-publishing programs run on either the Macintosh or MS-DOS computers. In all cases, two disk drives are necessary, and a hard-disk drive is either required or highly recommended.

The following descriptions of the top programs for both the Macintosh and MS-DOS computers start with a quick overall assessment, then move to a listing of the best (PROS) and worst (CONS) features. These desktop-publishing programs are feature-laden, as they should be for their asking price, and are designed for serious use.

One of the virtues of desktop-publishing software is that it can import files from different sources. Most word processors offer the option of saving ASCII (text) files, and virtually every desktop-publishing program will accept files saved in this format. The downside of ASCII files is that they lack formatting information (such as underlining and boldfacing instructions). You are better off with a desktop-publishing program that will accept files saved in your favorite word processor's and graphics program's usual file formats, if possible.

If you stumble on the terminology when reading the descriptions, refer back to the "Desktop-Publishing Glossary." Unless otherwise noted, all of the programs listed include on-screen measurements, magnification, automatic hyphenation, facing-page (a "spread") display, automatic and manual kerning control, a user tutorial, and no copy-protection.

MACINTOSH

Quark XPress

PUBLISHER: Quark, Inc.; (303) 934-2211

LIST PRICE: $695

HARDWARE REQUIREMENTS: Macintosh 512K enhanced, Plus, SE, or II. External or hard disk. 1MB memory recommended.

Overall: This program is one of the best around—powerful, yet still easy to use. Several advanced features simplify the design process, and you can save layout templates to reuse later. With its flexible printout capability, *Quark XPress* is a good choice for virtually any publishing project.

Pros: Wraps text easily around irregularly shaped graphics. Visible indicator displays text flow from column to column and page to page. Text also flows automatically from column to column or page to page. Good tracking control. Extensive selection of border designs, plus ability to create customized designs. Text search-and-replace function, plus spelling checker. Five levels of on-screen magnification and reduction. Maximum page size 48-by-48 inches using tiled printouts; printout sizing from 25 percent to 400 percent. Prints thumbnails. Limited color printing.

Cons: Can't export revisions in text back to original word-processing file. Copy protected (but non-copy protected version available free of charge). Expensive.

MacPublisher III

PUBLISHER: Boston Publishing Systems; (800) 637-5010; (617) 267-4747

LIST PRICE: $295

HARDWARE REQUIREMENTS: 512K Macintosh, Plus, SE, II. Two disk drives.

Overall: Boasts several features not found in other programs, notably the ability to rotate text or graphics to print at an angle, print text in a "gray screen" tint, and automatically add leading to fill out column depth and vertical justification. A unique simplified "dummy" view of the publication, displaying blocks with article name and size, is also helpful. However, lack of automatic text wrap around graphics and inconvenient system for continuing text blocks makes this program relatively difficult to use.

Pros: Excellent use of "spec sheets" for precise control of text and graphic placement and characteristics. Exceptional selection of graphic tints and patterns. Automatic page and article numbering. Maximum publication size 17-by-28 inches using tiling. Desk accessory for sending pages by modem included. Handy spiral-bound reference guide. Works with 400K disk drives.

Cons: Awkward control of text continuations. Complicated procedure for cropping and sizing graphics.

PageMaker 2.0

PUBLISHER: Aldus Corp.; (206) 622-5500

LIST PRICE: $495

HARDWARE REQUIREMENTS: Macintosh Plus, SE, or II. 800K external drive (hard disk highly recommended).

Overall: The most literal translation of traditional publication pasteup techniques to the computer, *PageMaker* requires placement of individual text blocks and graphic elements "by hand" on screen. This approach is easily understood and allows great freedom in designing individual pages, but the lack of automatic features found in other programs (most notably automatic wrapping of text around graphics and automatic placing of long stories in multiple columns and/or pages) can make the design process more time-consuming than necessary. While many users like *PageMaker*'s feel, the program's limitations make it better suited for short publications.

Pros: Accepts text and graphic files from a wide range of Macintosh application programs. Useful undo function. Excellent use of nonprinting on-screen guidelines for text and graphic placement. Extensive choice of ruler measurement units. Automatic page numbering. Excellent hyphenation control. Exports text changes back to original file. Five levels of screen magnification and reduction. Maximum publication size 17-by-22 inches with tiling. Prints thumbnails. On-line help. Excellent manuals and tutorial.

Cons: Will not automatically wrap text around graphic images—a significant shortcoming. Can't automatically place large documents on multiple pages, making lengthy pasteup jobs tedious. Very limited word-pro-

cessing features, making on-screen editing difficult or impossible.

Ready Set Go! 3

PUBLISHER: Letraset USA; (201) 845-6100
LIST PRICE: $395
HARDWARE REQUIREMENTS: Macintosh 512K, Plus, SE, II.
Overall: *Ready Set Go! 3* boasts an exceptional array of word-processing features and an unusually complete graphics toolbox, but has limited printout capability. The program will run (marginally) with a single 400K drive, though convenience and performance improve drastically with larger drive capacities.

A major revision (Version 4, $495), to include style sheets, a redesigned user interface, and additional file-format support, was recently announced, but too late for review.
Pros: Flexible on-screen grid system for creating layouts. Extensive selection of graphic fill and line patterns. Five levels of on-screen magnification and reduction. Text search-and-replace function, plus spelling checker.
Cons: Printouts limited to standard-size pages. No thumbnail printouts. Lacks document-wide automatic kerning. Clumsy picture resizing procedure. Tutorial; no sample documents provided.

MS-DOS

PFS: First Publisher

PUBLISHER: Software Publishing Corp.; (415) 962-8910
LIST PRICE: $99
HARDWARE REQUIREMENTS: IBM PC or compatible. Two floppy drives or a hard disk.
Overall: As the name implies, this is a beginner's program, and it's generally successful at making simple page-makeup tasks easy to accomplish. Text flows automatically around rectangular graphics, fonts are accurately represented on-screen (unusual in an MS-DOS publishing program), and lots of fonts and clip art are included in the package. The major problem is limited laser printer support, especially for the HP LaserJet, which cannot print headline-size type at full resolution with this program. An outstanding program if you're limited to dot-matrix, though.
Pros: Easy to learn and to use. Automatic text wrap around rectangular graphics.
Cons: Lacks kerning, automatic hyphenation, and facing page display. Limited importation of text and graphics from other programs. Mediocre on-screen rulers.

GEM Desktop Publisher

PUBLISHER: Digital Research, Inc.; (408) 649-3896
LIST PRICE: $395
HARDWARE REQUIREMENTS: 640K IBM PC or compatible. Two disk drives.
Overall: Like *Ventura Publisher*, *GEM Desktop Publisher* uses the comfortable GEM desktop interface and style sheets to format text. There are several problems, though—lack of kerning control or automatic hyphenation, limited font selection, and inability to import graphics from many popular software applications. Still, *GEM Desktop Publisher* does produce handsome printouts at a reasonable price.
Pros: Excellent on-screen measurement display for precise positioning of text or graphic elements. Automatic page and footer numbering. Automatic placement of vertical lines between columns. Color printout support.
Cons: Supports only GEM fonts (for example, no cartridge or soft fonts for HP Laserjet series, no additional PostScript fonts for Apple LaserWriter). No kerning or tracking control. No superscripts or subscripts. No automatic hyphenation. Can't export text changes back to original file.

PageMaker

(see Macintosh listing above for publisher data)
LIST PRICE: $695
HARDWARE REQUIREMENTS: 640K IBM PC or compatible, IBM Personal System/2 Model 30. Hard disk; Microsoft *Windows*.
Overall: *PageMaker* for the IBM is identical in page-makeup features and limitations to PageMaker 2.0 on the Macintosh *(see above)*. Run-time version of Microsoft *Windows* included. However, the MS-DOS version lacks on-line help and provides fewer printout options.
Pros and Cons: (*See Macintosh section*)

Ventura Publisher 1.1

PUBLISHER: Xerox Corp.; (203) 968-3000
LIST PRICE: $895
HARDWARE REQUIREMENTS: 512K IBM PC, AT, or compatible. Hard disk.
Overall: At the heart of *Ventura Publisher* are style sheets, with each set of typographic and formatting decisions saved under a name (such as "body copy" or "head #1"). The style-sheet system is especially useful for producing documents with a consistent format. In fact, the original release of *Ventura* was considered good *only* for lengthy reports and manuscripts, and not for publications which change design from page to page. Version 1.1, though, effectively answers these limitations, allowing more interactive page makeup. *Ventura*, which runs under GEM, is a superb tool with both quick design capabilities and fine typographic control. High priced, but worth it.
Pros: Accepts text and graphics from a wide range of applications software. Extraordinary degree of typographic control (leading and kerning). Links text blocks and graphics to keep them together as layout changes. Automatically draws rules and boxes in position relative to text, and resizes them when text-block size changes. Exports text changes automatically back to word-processing file. Automatically numbers chapters, sections, headers, footers, footnotes. Automatically highlights loosely spaced lines. Page size up to 11-by-17 inches with tiled printout. Includes 20 sample templates, excellent tutorial and documentation. Runs reasonably well on ordinary PC or compatible.
Cons: Does not support LaserJet cartridge fonts (but will use downloadable soft fonts). Expensive. Current version does not import Microsoft *Windows* format graphics, although the next upgrade should do so; a utility for that purpose is available to registered owners. ■

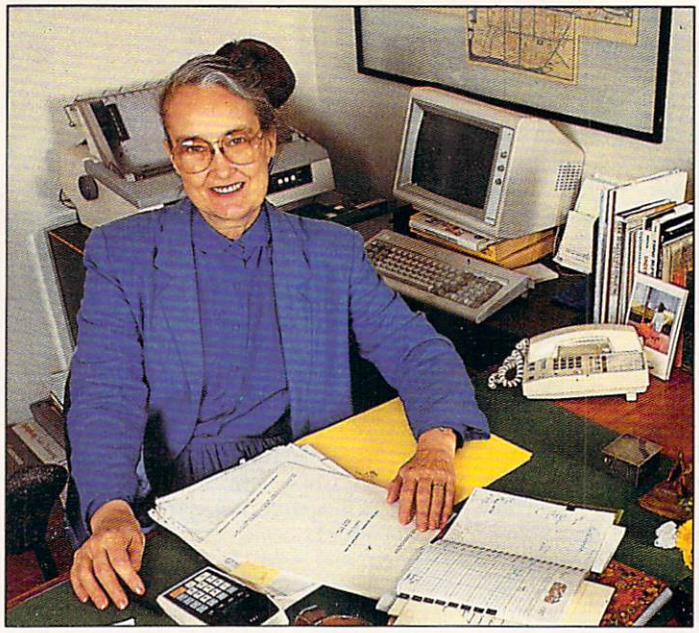
DESKTOP PUBLISHING RESOURCES

The Aldus Guide to Basic Design by Roger C. Parker (Aldus Corp.; $6.95).

The Art of Desktop Publishing by Tony Bove, Cheryl Rhodes, and Wes Thomas (Bantam Books; $19.95)

Desktop Publishing on the Mac by Kevin Rardin (NAL/Plume; $22.95)

Desktop Publishing with Your IBM PC and Compatible by Jerry Willis (HP Books/Knight Ridder Press; $15.95)



Home-Office SHOPTALK

AN EXPERT FIELDS QUESTIONS ABOUT STARTING, MAINTAINING, AND EXPANDING A HOME-BASED BUSINESS

BY JOANNE H. PRATT

EDITOR'S NOTE: *This installment of ShopTalk is the second in a series that began in the October issue.*

Q: Where can I purchase a copy of Patricia McConnel's *The Woman's Work-at-Home Handbook: Income and Independence with a Computer* (Bantam Books, 1986; $9.95)?

—C.M. COLLINS, *Monroe, North Carolina*

A: Save your first dime toward independence by telephoning Bantam's toll-free number ([800] 223-6834, ext. 479) to order the handbook.

Q: I have a Macintosh computer and need some nitty-gritty down-to-earth business information. My neighbor is planning to produce a 35-page tabloid of advertisements and asked me to type approximately 400 ads per page in about one week. I don't think I could type that much if I worked 10 hours a day! He said he would pay me $35 per tabloid page, the fee printers would charge him. Does that sound competitive?

I also have an excellent background in designing newsletter layouts and would enjoy doing them for churches and other groups but don't know how to begin or how much to charge. I've contacted independent CPAs who might be interested in my services, and, again, I'm unsure about my fees. I've typed dissertations for college students, but they often fail to pay, and I don't like doing something for nothing. Can you offer suggestions?

—C. COLE, *Columbia, Missouri*

A: "I can't do that" is my reaction, also, to jobs that sound overwhelming. But maybe there's a way to turn your neighbor's advertising product into a workable project for yourself. And the same advice applies to other opportunities. (You're fortunate to have found several types of clients who want to use your services.) Your first step is to do a little market research.

First check pricing. Call several printers who do typesetting and ask for estimates, so you'll know whether $35 per tabloid page is really the going rate in Columbia. Does the price include typing from handwritten copy, which is undoubtedly what you'll be doing?

Next, learn a little more about the tabloid. If it's mailed weekly, won't many of the ads be repeated with only minor changes? If you contracted to do the tabloid for "x" number of weeks, you might lose money on the first typing, but make it up on the rest. As for the time spent to type the first copy, you could negotiate to start inputting the ads as the neighbor sells space (rather than trying to type it all in at once). The following editions may require much less time to type. So you need more details about this job—or any job—before you refuse or accept it.

Likewise, building a business of designing newsletters for churches requires a little market research. Telephone several churches and accountants and ask whether they're paying to have newsletters produced. If volunteers prepare the camera-ready copy for printing, there's not much chance to sell your services. But if a church or CPA is contracting to have a newsletter typed and laid out, get copies of it and make some sample mock-ups to show that you can do a better job. Doing a few mock-ups will also give you a better idea of how much time the job will take you and, therefore, how much you should charge.

In any event, a Macintosh gives you a big advantage: you can easily add graphics to your text. Some reproduction businesses now have Macs and Apple LaserWriter laser printers. You could take a disk to one of these shops and get terrific-looking laser printouts that would be inexpensive to reproduce.

Estimate how much time it would take you to lay out each newsletter. Set a minimum acceptable hourly rate for yourself, and don't offer to produce the newsletter at a lower price than your competition unless you're sure you can do so at a profit.

Before you write off the kids who don't pay, try asking for a deposit equivalent to your estimate of half the cost of the job before accepting the work. Then don't relin-

JOANNE H. PRATT, *president of Joanne H. Pratt Associates, Dallas, Texas, has 28 years of experience operating home-based businesses. Pratt Associates conducts research and consults for private firms and government agencies. Send your questions about working at home to Home-Office ShopTalk,* FAMILY & HOME-OFFICE COMPUTING, *730 Broadway, New York, NY 10003.*

quish the typed product until you're paid the balance. To get more interesting typing jobs, look for faculty who need help preparing their manuscripts for publication.

Q: A few months ago I read some articles about starting a home-based computer business. As luck would have it, these issues mysteriously disappeared. Could you please send any home-business information to me? I'm using an IBM PC XT with a 30MB hard drive.

—D. GLEINN, *Miami Lakes, Florida*

A: "Starting Your Own Home Business," which appeared in our April issue, is a good starting point. "Top 10 Computer-Based Home Businesses" (June) is a good follow-up. In addition to ordering back issues (FAMILY & HOME-OFFICE COMPUTING, P.O. Box 717, Cooper Station, New York, NY 10276-0717; for one to four issues at $4.25 each), you might take a look at *The Electronic Cottage Handbook* ($6, plus $1 shipping; Lis Fleming, P.O. Box 1738, Davis, CA 95617-1738), which gives an overview of 10 top computer-based home businesses and how to run them.

For even more advice, turn to the excellent Small Business Bibliography Number 2, "Home Businesses," which lists resources for planning, starting, and operating a computer-based home business. You can get a copy by calling the U.S. Small Business Administration Answer Desk ([800] 368-5855) and asking for the telephone number of the SBA office nearest to you.

Q: Help! I'd like to start a secretarial service that would eventually offer bookkeeping services. I want to start out with the "bare" necessities and expand a piece at a time, while maintaining a high-quality product.

—S. DENTON, *Alvin, Texas*

A: Beat the competition with a laser printer. The laser printer has set a new standard for office documents. To put out a high-quality secretarial product, I recommend building your system around the Hewlett-Packard LaserJet Series II printer. Although this printer lists for $2,495, it's commonly discounted to about $1,700. That's still a lot of money, but the LaserJet meets your requirement for expandability very well, especially since you can add a plug-in board. For instance, QMS Inc. ([205] 633-4300) will soon be selling *Jet Script*, which has the Postscript page-description language. Postscript would enable you to print in various fonts, and thus add desktop publishing to your services.

If you think you might turn toward desktop publishing eventually, you should get an IBM PC AT clone (about $2,000); if not, you can use an IBM PC clone (about $1,000). Microsoft *Word* is an excellent choice for word-processing software. And there's a host of good bookkeeping software for MS-DOS computers. In general, an MS-DOS system will be less expensive than a Macintosh system.

Q: I'd like to surprise my work-at-home spouse with something to spruce up his office as a holiday gift. Any suggestions?

—M. LEATHERS, *Memphis, Tennessee*

A: If you want to splurge, a comfortable swivel-tilt desk chair that will roll easily from desk to computer would be fantastic. A version of my Equa chair, manufactured by Herman Miller Company, is available through furniture dealers. The models range from $323 to $1,517, but Equa is worth its weight in gold.

For other ideas, take a look at the office now. If the monitor is propped up on telephone books, buy a swivel-tilt stand. If the computer keyboard is the wrong height for comfortable typing, perhaps a pull-out shelf that attaches under the desk would be welcome. Other ideas are a new telephone that stores 20 or 30 numbers, a facsimile phone that allows you to send images to other facsimile machines, or a personal copier.

Inmac (2465 Augustine Drive, Santa Clara, CA 95054) sells computer furniture and accessories directly to customers through showrooms and catalogs. Pryor Corporation (222 William St., Bensenville, IL 60106) also displays a variety of computer furniture in its catalogs. For more information, look at next month's *"Catalog Shopping"* article.

Q: My word-processing business has grown to the point that it overflows the enclosed porch where it is located in my home. I also need to hire someone to help me meet my demands for service. How can I expand my business without leaving my house, so that I can continue to be here when my son arrives home from school?

—N. LOWELL, *Cincinnati, Ohio*

A: Success brings with it a new set of problems! You need to compare your business and personal goals. Since you want to keep your business in your home, you may have to limit the ultimate size of your business. But even so, you can expand beyond your present size.

Cast a critical eye over your office. How much of what you see do you work with every day? If you're typical of most of us, there's a lot of stuff you use infrequently—or never. So move all of your bulky items, such as old files, paper, and other supplies, out of the office and into your garage or a closet. (To make room, be ruthless about discarding objects you've kept for nostalgia.) Buy modular shelving or storage bins to keep your office supplies organized and accessible.

You can add personnel by setting up a second workstation in the space you've just gained, or you can train new workers who'll perform the word processing in their own homes. Judging from the letters we get, there are many people with word-processing and data-entry skills who own computers and would like to work part-time. If you hire people with compatible equipment, they could bring the disks to your office for your approval of their work and final printing. (Most people don't own the letter-quality or laser printers needed to produce high-quality documents.)

One advantage of expanding with part-time labor is that you don't incur the expense of full-time employees until you've built the business to support them. The disadvantage is that you have to keep on top of scheduling the work. I suggest writing a formal agreement so that you can count on help when you need it for rush jobs, but your part-time employees won't have to stay home all day waiting for the phone to ring. For example, you could promise same day delivery of work to customers who come in before 10 a.m. and require your staff to call in for daily assignments at 10:15 a.m. Whatever arrangement you make has to result in quality service for the customers and be beneficial to your helper(s) as well as to you.■

Getting More From PC-DOS and MS-DOS

Part Two

MINI-BUYER'S GUIDE TO DOS SHELLS—18 REVIEWED

BY HENRY F. BEECHHOLD

EDITOR'S NOTE: *In last month's Part One of "Getting More From PC-DOS and MS-DOS," we saw how DOS-shell software can help you gain control of the disk operating system available on the IBM PC and compatibles.*

Many people find MS-DOS a beast to learn, but with the help of a DOS-shell program, you can begin to tame the beast and get more out of DOS. A DOS shell can also be your gateway to a real mastery of your IBM PC or compatible computer by painlessly teaching you about various DOS commands and functions.

By putting a menu on the screen, a basic DOS shell liberates you from the need to type in the sometimes lengthy and often memory-taxing MS-DOS commands. Then, when you need to perform operating system tasks such as copying files, running a program, or examining a file's contents, you simply make choices from the menu.

MAKING MS-DOS WORK FOR YOU

Marilyn Ratcheson is a training manager for a small federal agency headquartered in Chicago called the Railroad Retirement Board. She uses a computer at work to "capture training data for reports, administer course registrations, track budget data, and analyze training-needs survey results." She also has a system at home. "In addition to bringing office work home, I use it to track my personal investments, keep records for a rental apartment I own, and record information for tax purposes," Ratcheson said.

Early in her computing days, Ratcheson began using a shell program called *Norton Commander*. "When I first started working with a hard disk, I had no idea of what the path command was. *[See "Glossary" for definition of "path" and other terms.]* So it was great for me to use the *Norton Commander* to locate the executable files, rather than typing in lengthy path names to change directories. Now, however, I have my most common utilities in a RAM disk that is specified in my path, and I have written a bunch of batch files to get me to where I want to go. It's just easier.

"The *Commander* is still one of the utilities on my RAM drive, and I invoke it now and again when I want to copy files or to see what's in files if there's more than one I wish to view. As I get more savvy, I find that I prefer to mix and match utilities. I'm getting close to finding the mix that is just right for the way I work."

Dave Hoagland, of Livermore, California, uses computers extensively both at home and work. He likes *Q-DOS II*. "There are so many ways that *Q-DOS* helps out that it's hard to know where to start. I use *Q-DOS* to quickly find any file anywhere on my hard drive, move me to the appropriate directory, and perform the task at hand—read, edit, erase, run, or whatever. Or *Q-DOS* helps me locate any file with a specific attribute, such as hidden or read only. Then, if I want, I can change it. Or I can change the name of a directory. The list goes on and on. Frankly, I'd hate to be without *Q-DOS*. I'd recommend it for *anyone* with a hard disk."

SHOPPING FOR A DOS-SHELL PROGRAM

If you've decided that DOS-shell software is what you want, look over the "DOS Shells Comparison Chart" and keep several points in mind.

Let's start by reviewing the basic types of DOS shells outlined last month:

Type One. The most elaborate shells, these offer menus within menus for DOS commands and utilities. Their key distinguishing feature is the capability to set up your own customized menus.

Type Two. Unlike Type One shells, these don't let you build custom menus. Otherwise, they share many of the same characteristics.

Type Three. Both Types One and Two rely on menus of one kind or another to help you control DOS. The rarer Type Three shell (of which *Top-DOS* is the prime example) offers no menus, but enhances DOS with other features that help you manage disks and files.

Two other characteristics of every DOS-shell package are manuals and on-line help.

Documentation. In the chart, you'll find references to the quality of documentation supplied with the DOS shells. A few explanations are in order. "Inadequate" means that the explanatory material was perfunctory or poorly written and would probably

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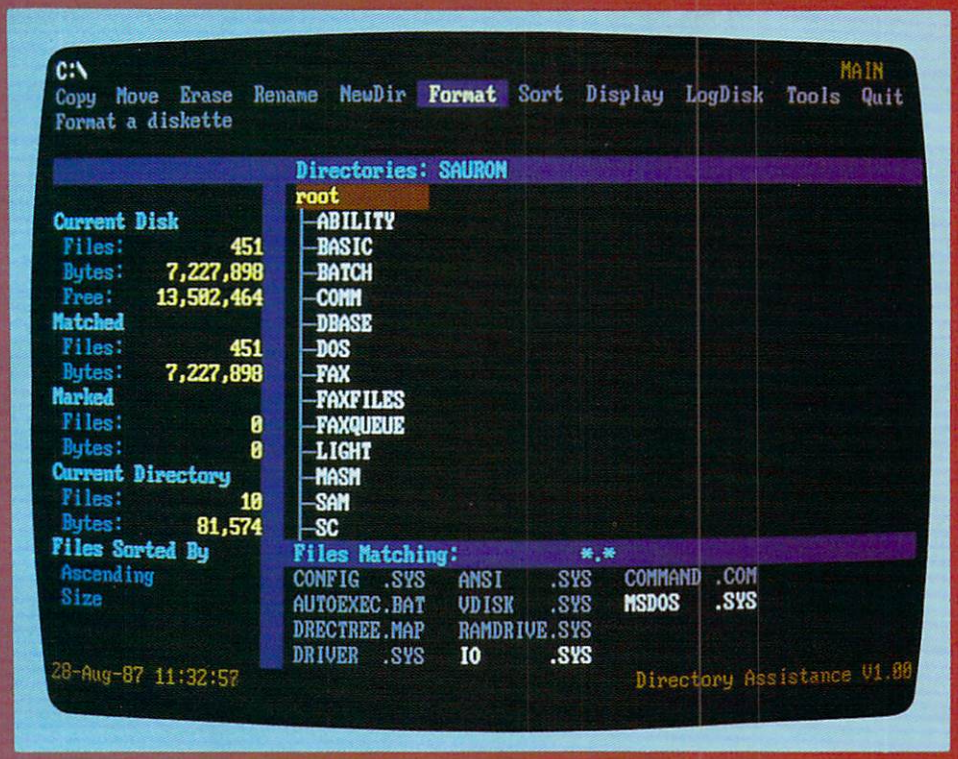
HENRY F. BEECHHOLD *writes the IBM section in* FAMILY & HOME-OFFICE COMPUTING'S *Machine Specifics department.*



This typical DOS-shell screen comes from *Directory Assistance* (see "Comparison Chart"). Note the names of the various directories—such as ABILITY, DBASE, and FAXFILES—branching off from the root, or main, directory (named SAURON in this example). These directory branches make up the "tree" structure of the disk. Also note the MS-DOS commands listed across the top row, such as COPY, ERASE, and FORMAT (that last command is highlighted and explained in the second row.) The left side of the Directory Assistance screen offers various bits of information about this hard-disk drive. For instance, there are 451 files in the drive (including programs and documents), but only 10 files in the current, or root, directory.

cause you heartburn. "Adequate" means that you can expect a simple tutorial and some explanation of the various features—enough to help you get the program installed and running. What's missing are the detailed explanations and clear language.

Help. All of the shells offer some kind of on-line help, usually called up by pressing a function key. In every case, these help screens give you enough information to solve the immediate problem that prompted your search for help. For example, pressing F1 in *TopDOS* will give you a screen full of *TopDOS* commands. Within a particular shell function (such as the *TopDOS* editor), there are similar screens. These are memory joggers, however, not explanations. You may very well have to resort to either a reference card or the manual itself. In some programs—say *XTREE*—a demand for help results in the appearance of a master help screen and 12 pages of specific explanations. And still other programs display a small inset window through which you can scroll for help that's relevant to a selected function. The Type One programs that allow you to create menus will just as readily allow you to create your own help screens, which can be called up as submenus.

Additional terms found in the "DOS Shells Comparison Chart" and commonly used in DOS-shell documentation and literature from the publishers of shells are defined in the next section.

GLOSSARY

Audit trail. A security system requiring each user to log onto the system by recording name, date, and time. This information is stored for access by the system manager. Also called a "user log."

Batch file. A specialized text file that batches, or groups together, a number of DOS commands. Used to automate various DOS functions.

Disk scan. Examination of the disk by the shell to determine what files are present. Often accompanied by sorting capabilities.

Keyboard macro. A text string or command string called up by pressing a single key.

Keystroke operation. Executing a shell or DOS command by pressing one or two keys, or selecting a menu item by entering its number or letter from the keyboard. Also called "function-key" or "single-key" operation.

Lotus-like menu. A horizontally displayed menu from which you pick an entry by moving a selection cursor and pressing a selection key (usually ENTER). Selection at the top level usually results in the display of a second-level menu, and so on. Also allows single-key selection. Similar to the menu style of Lotus *1-2-3*.

Menu lockout. A type of security in which certain menus can be blanked, or made inaccessible, to unauthorized users; you can use such menus only through a password. Also called "password security."

Parameter passing. A shell's ability to allow the user to enter variables (parameters) after calling a program. For example, you can run a word processor and also load a particular document (the parameter) with the same command. In simple point-and-shoot shells, you can't include parameters when you select a program to run.

Path. A DOS command that tells DOS to search directories on specified drives for particular programs or batch files.

Point-and-shoot. Move the cursor to a selection and press the "execute key" (usually ENTER). Often combined with Lotus-like menus.

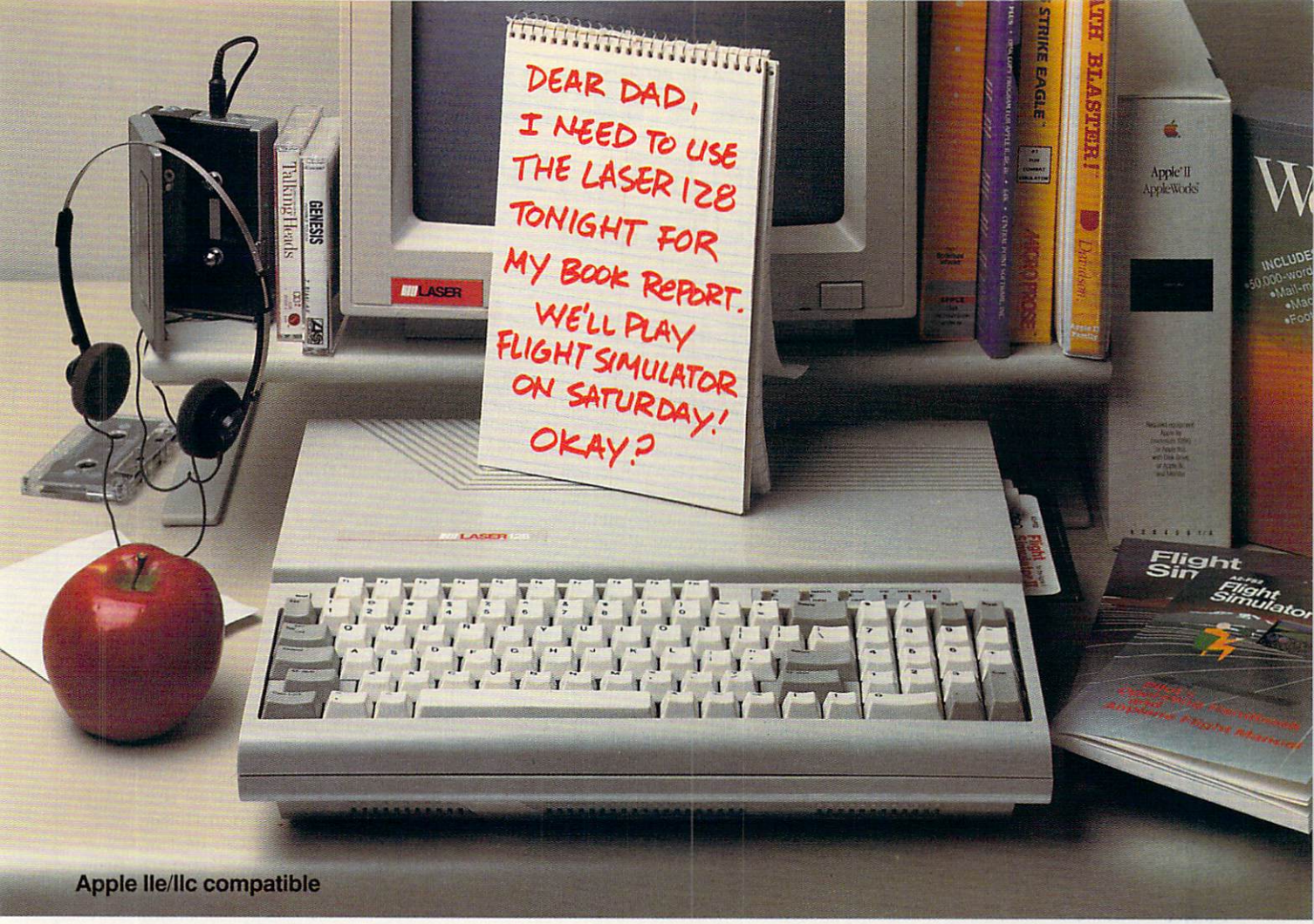
Screen blanking. Protecting the video display screen from premature aging (phosphor burn-in) by blanking the display after a user-selected period of computer inactivity.

Text editor. Offered by almost every shell for viewing and editing text.

Tree. A visual display of a disk's directories, with the various subdirectories branching off like a tree. Helpful for visualizing a hard disk's file structure and for running programs in subdirectories.

DOS SHELLS COMPARISON CHART

Title/Publisher/Price	System requirements	Type, Notable Features, & Remarks
1dir+ Bourbaki Inc. (208) 342-5849 $95	256K IBM PC/XT/AT. Hard drive recommended. DOS 2.0 or higher.	Type One. Offers menus within menus within menus. Choose selections by point-and-shoot or function-key method. Includes text editor, on-line help screens, and password protection. Large detailed manual is a big help, especially for intermediate users.
Automenu Magee Enterprises (404) 446-6611 $50	256K IBM PC/XT/AT. Hard drive recommended. DOS 2.0 or higher.	Type One. The inexperienced can use the provided menus, but the custom menus require some simple DOS programming skills. Includes password security, mouse support, and automatic screen blanking. Small manual is only marginally adequate.
Directory Assistance Individual Software Inc. (415) 341-6116 $60	256K IBM PC/XT/AT. Hard drive recommended. DOS 2.1 or higher.	Type Two. For DOS functions (such as copying and renaming files or formatting disks), sorting programs and document files, and password protection. Comes with both 5.25-inch and 3.5-inch disks. Very small manual, but an easy-to-use program.
Direc-Tree Plus Micro-Z Company (213) 377-1640 $55	128K IBM PC/XT/AT. Hard drive recommended. DOS 2.0 or higher.	Type Two. Most menu operations controlled by function keys listed on-screen. Includes two types of security (password and hidden files), a pop-up notepad, mouse support, a text editor, keyboard macros, help windows. Small, yet adequate manual.
The EMCEE Command Software Systems, Inc. (213) 457-1789 $70	256K IBM PC/XT/AT. Hard drive optional. DOS 2.0 or higher.	Type One. With a menu editor that lets you customize the Main Menu and generate your own submenus. Includes on-line help screens, automatic screen blanking, and password security. Requires some previous DOS knowledge, but the manual is good.
FirstMenu Harvey Software (813) 482-8600 $50	256K IBM PC/XT/AT. Hard drive recommended. DOS 2.0 or higher.	Type One. Several pop-up menus are provided, and you can customize an unlimited number (although some DOS programming skills are required). Includes a simple text editor and full mouse support. Fast running. Small, only adequate manual.
Hot Executive Systems, Inc. (800) 634-5545 (818) 990-3457 $75	256K IBM PC/XT/AT. DOS 2.1 or higher. 512K, hard drive, DOS 3.1 or higher recommended.	Type One. Menus (both supplied and individually created) pop up on screen to perform DOS commands (such as FORMAT and DISKCOPY), find files on a hard drive, and give on-line help. Includes a text editor, keyboard macros, and a simple drawing facility for menus. Full customizing. Manual gives good overview.
Le Menu Bartel Software (800) 453-6368 (801) 566-5544 $80	256K IBM PC/XT/AT. Hard drive required. DOS 2.1 or higher.	Type Two. Point-and-shoot system with five main menus and up to 26 submenus each. Includes pop-up help windows and a separate DOS utility menu (for tasks like disk formatting and backing up a hard disk). Offers password security and a simple file editor. Marginally adequate manual done up as restaurant menu.
Master Control Master Control Systems, Inc. (804) 420-3627 $60	256K IBM PC/XT/AT. Hard drive required. DOS 2.0 or higher.	Type One. Elaborate system for creating single- or dual-column menus that allow you to start programs with one key. Includes screen blanking, parameter passing to any program selected, and multilevel password security. Manual is only adequate (at best).
MenuManager Southern Computer Systems, Inc. (205) 251-2985 $50	256K IBM PC/XT/AT. 2nd drive optional. DOS 2.0 or higher.	Type One. Includes a sample menu, but is best for those who need to build their own menus, since the supplied menu editor prompts you step-by-step as you design one. Allows unlimited number of discrete or linked menus. Includes screen blanking, parameter passing, and password security. Adequate manual.
The Norton Commander Peter Norton Computing, Inc. (213) 453-2361 $75	192K IBM PC/XT/AT. 2nd drive optional. DOS 2.0 or higher.	Type Two. Point-and-shoot menus along with single-key selection for certain DOS tasks (like viewing or copying files and setting up new subdirectories) make it one of the easier shells to learn. Manual contains a good introductory tutorial.
PathMinder Westlake Data Corporation (512) 328-1041 $65	256K IBM PC/XT/AT. 2nd drive optional. DOS 2.0 or higher.	Type One. File management using Lotus-like menus; also allows custom application menus. Includes a text editor, user log, audit trail, and encryption security. Low memory overhead (uses only 4K) and a very good manual.
Program Manager Lassen Software Inc. (916) 891-6957 $40	128K IBM PC/XT/AT. Hard drive required. DOS 3.0 or higher.	Type Two. File and menu manager with three different screen formats: one-, two-, and three-column menus. Allows up to 100 programs for each set of menus. Includes text editor and screen blanking. Skimpy, inadequate manual that you print from disk.
Q-DOS II Gazelle Systems (801) 377-1288 $70	256K IBM PC/XT/AT. Hard drive recommended. DOS 2.0 or higher.	Type Two. Lotus-like menus with full-screen displays of DOS commands, directories, and files. Comes with text editor, and lets you look through all files. Finds files on hard disk, and also copies, moves, deletes, or renames files. Extremely fast.
Smart Directory Extra Dimensions Software (714) 551-2770 $40	256K IBM PC/XT/AT. Hard drive recommended. DOS 2.0 or higher.	Type Two. Automatically sorts directories either alphabetically, by extension, date, or size. Also displays tree structure of directories and subdirectories. Lets you browse through a file's contents while in the directory. Simple manual for a simple yet useful program.
Snap The Mt. Whitney Group (714) 891-6320 $100	256K IBM PC/XT/AT. Hard drive required. DOS 2.11 or higher.	Type One. Comes with menus, and lets you custom design your own systems. With point-and-shoot menu selection, a text editor, and file recovery for (accidentally) deleted files. Displays time. Automatically blanks screen when keyboard is inactive. Good, but poorly printed manual.
Top DOS FrontRunner Development Corp. (800) 654-7494 (818) 376-1322 $70	128K IBM PC/XT/AT. Hard drive optional. DOS 2.0 or higher.	Type Three. Adds new commands to DOS (such as WHEREIS, which searches an entire disk for specific files) and extensions to existing commands (such as DIR/B, which shows all files written BEFORE a specific date). Includes text editor, and works with mouse. Large, first-rate manual explains all.
XTREE Executive Systems, Inc. (800) 634-5545 (818) 990-3457 $70	192K IBM PC/XT/AT. Hard drive recommended. DOS 2.0 or higher.	Type Two. Shows the entire DOS structure of directories, subdirectories. Can sort files on-screen by name, extension, size, date, or time. Can also copy, move, delete, or rename files. On-line help, but only a small, adequate manual.



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The 512K Amiga, an audio-visual delight, is best-suited for games and creativity software.

There's a bit of Dr. Jekyll and a bit of Mr. Hyde in the Amiga 500. On occasions, it's a bright, ennobling, challenging machine that responds to your mouse clicks like a sports car responds to a gas pedal pressed to the floor. Other times, it's an infuriating and unreliable machine that delivers cryptic messages such as "Out of heap space." Am I on the right planet?

Commodore, which has seen its highly touted Amiga 1000 flounder in the market for more than two years, recently brought out two new versions of the machine. The 512K Amiga 500 is an "entry-level computer," while the Amiga 2000 is a business machine.

Some Commodore executives like to describe the Amiga 500 as the ultimate computer for the home, which makes a lot of sense. The 500 is an audio-visual machine that will delight and entertain people of all ages. It's a versatile computer capable of virtually any application—be it education, creativity, or personal productivity. For reasons that become clear later, the 500 is *not* a reliable business machine.

Maybe it's best to envision the 500—with its superior 3.5-inch disk drives and mouse-based operating system—as the logical heir to the Commodore 64 and 128.

Setup. The one-piece unit includes the keyboard, one disk drive, and the CPU. *KickStart*, the main system software, is built-in, so you don't have to load it from disk as you do on the Amiga 1000. Setting up the 500 is a painless operation, but the drawback to the one-piece design quickly becomes evident.

The thick cable that connects a monitor to the CPU is relatively inflexible, making it difficult to move the keyboard about. And when you add the mouse, a second disk drive ($300), and a printer, you are looking at an ugly tangle of cables.

Monitor and Keyboard. The best monitor to use with the 500 is the Amiga 2002-23 ($400), a sharp RGB analog monitor. The 2002 has excellent sound and color (4,096 colors are available). In addition, through the Preferences function in *Workbench* (software that comes with the machine), you can change the amount of red, green, and blue signals to yield a picture you'll find visually attractive.

Not long after I had hooked up the system, I was listening to the rich sound of Bach's "Jesu Joy of Man's Desiring," which is one of the demos with AmigaBasiC. That was an ethereal moment: my family stared as if it were 1948 and I had turned on a television.

The 500 keyboard is superb. It's compact, yet has a full assortment of keys: a numeric keypad, a separate cursor keypad, special AMIGA and COMMODORE keys, 10 function keys, and large SHIFT and RETURN keys for roughshod typists like me.

Operation. When you turn on the Amiga, a picture of the *Workbench* disk appears on-screen, an indication that you should insert it into the drive. (The disk drives make a quiet thumping sound when in use.) Do that, and *Workbench* loads. Alternatively, you can directly load a commercial software package.

You can fool around with *Workbench* for hours to get the feel of the machine. Included are Clock, Notepad, Calculator, and Preferences sections that allow you to customize various aspects of the computer's performance (color scheme and printer type, for instance).

The Say section, which lets you try out the Amiga's built-in speech function, is a lot of fun. Type in any sentence and the Amiga will say it, with varying degrees of accuracy. I typed *Reagan*, and I heard *Reegun*. I tried *Raygun* and heard our President's name properly pronounced. You can play with the tone, pitch, and rate of the voice, as well as the gender, to get different effects.

The *Extras* disk that comes with the machine also has short speech demos, as well as minitutorials that show you how to change or print graphic images. I'm not a programmer and have never had much interest in BASIC, but I found the AmigaBasiC's presentation enticing. You can show the program listing on one-half of the screen, run the program on the other half, and then watch the effect of your changes.

To try out the Amiga's multitasking ability, I loaded the Bach *Jesu* BASIC demo and Notepad from *Workbench*. What a way to work! As I typed my notes, I listened to Bach in the background.

In the month or so that I tested the Amiga 500, I experienced many highs and lows. Often, I'd think I was mastering the machine when the screen would "freeze." Once, a spreadsheet program crashed and I got the message: SOFTWARE FAILURE. PRESS LEFT MOUSE BUTTON TO CONTINUE. GURU MEDITATION #00000003-00042050.

I suppose the number is a way to trace the error; I didn't really care because I wasn't planning to use the software seriously. But, having seen that and having heard similar stories from Amiga 1000 users, I wouldn't encourage anyone to depend on the Amiga as a business machine. However, it's hard to tell whether the computer or the software is at fault.

Software. Any computer, whatever its native talent, isn't worth a dime unless it has good commercial software that draws on the talent. Fortunately, there is some software that makes the Amiga sing. The majority

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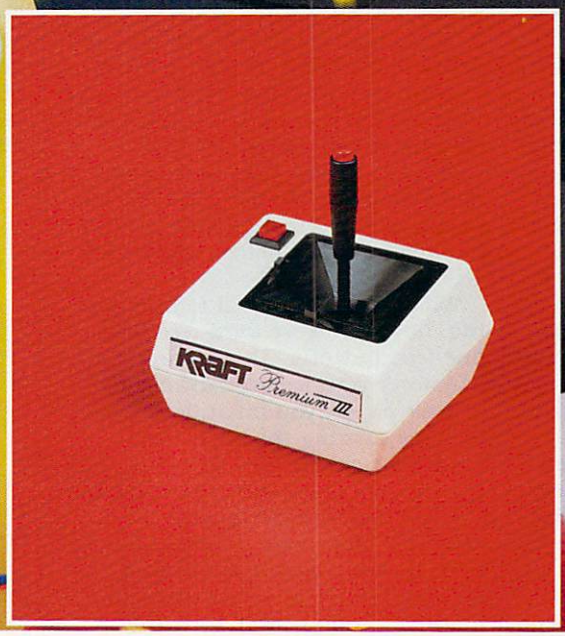

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of the 500 or so packages comprises creativity software and games.

Deluxe Music Construction Set, *DeluxePrint*, *DeluxePaint II*, *Instant Music*, *Earl Weaver Baseball*, and *Marble Madness* (all from Electronic Arts) are all excuses to buy an Amiga. *Defender of the Crown*, *King of Chicago*, and *SINBAD and The Throne of The Falcon* are games with spectacular graphics (all from Mindscape) that effectively utilize the Amiga 500's sound capabilities. Communications (*Diga!*) and animation (*Aegis Animator*) software are available from Aegis Development Inc. and word-processing software is available from a number of publishers, including WordPerfect Corp. First Byte (distributed through Electronic Arts) sells a line of educational software that takes advantage of the 500's built-in speech capability.

Given the level and type of software support, the Amiga is best considered a game and creativity machine. It's fun to use and can be a challenge for inquiring people. In addition, anyone with a technical nature would probably love the amount of control you can exert over the machine, the sophisticated BASIC, and the machine's depth.

When will the Amiga 500 be suitable for a broader audience? When more software is developed and distributed. The chicken is here. We're waiting for the eggs. —NICK SULLIVAN

EDITOR'S NOTE: *For those who are interested in learning more about the Amiga, your local Amiga dealer may have copies of a video entitled "Video Test Flight."*

CIRCLE READER SERVICE 101

SP-180AI Dot-Matrix Printer

MANUFACTURER: Seikosha America Inc.
ADDRESS: 1111 Macarthur Blvd., Mahwah, NJ 07430; (201) 529-4655, (800) 422-7768
HARDWARE REQUIREMENTS: IBM PC, PS/2, and compatibles; (the SP-180VC for C 64/128)
PRICE: $249

Seikosha, most often recognized as the Japanese manufacturer of Seiko and Pulsar timepieces, sells 13 dot-matrix printers, ranging in price from $249 to $1,949. IBM PC and compatible owners who don't want to spend too much on a printer might want to consider the company's $249 SP-180AI nine-pin dot-matrix printer.

The lightweight nine-pound printer measures 16-by-4.6-by-11.8 inches. It produces copy at 100 characters per second (cps) in draft mode and 20 cps in near-letter-quality (NLQ) mode (compared to 120 cps and 16 cps, respectively, on the $299 Epson LX-86).

Its NLQ type should be acceptable for much of your business and professional correspondence, while the draft type will suffice for school and work reports and personal letters.

The printer's features include character-width selection, superscript and subscript, underlining, boldfacing, page-length setting, horizontal-tab setting, margin setting, and graphic printing. There are also international character sets for seven languages (Danish, English, French, German, Italian, Spanish, and Swedish). The SP-180AI accepts paper up to 10-inches wide, prints in elite and pica modes, and has a 1.5K buffer.

What I was surprised to find missing, however, were form-feed and line-feed buttons. This means that whenever you need to advance the printer paper, you must do it manually by turning the paper-feed knob. Not only is this irritating, but it wears on the printing mechanism.

I also had a problem with the printer's NLQ mode. When I changed to NLQ, the power-light blinked (indicating an error, according to the manual), and I couldn't get the printer working. So I called Seikosha's tech-support hotline and an assistant eagerly helped me rectify the problem. (I had chosen the inappropriate printer driver on my word processor.) Once I loaded the correct printer driver, the NLQ mode worked perfectly—although it crept at 20 cps.

Other than that, setting up the printer and getting it to work with my Zenith computer was a breeze. The manual accurately illustrates and describes the steps to setting up and using the printer.

The SP-180AI is sold through catalogs and stores, such as Target and Toys "R" Us stores and is covered under a two-year limited warranty.

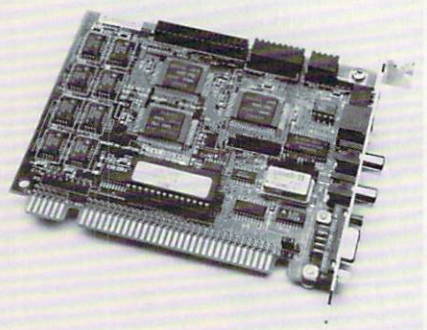
With its $249 price tag, easy setup, and Epson compatibility, this printer is, indeed, suitable for someone looking for an inexpensive, no-frills printer. —STEPHANIE ESTERS

CIRCLE READER SERVICE 102

Thomson EGA Ultra Version

MANUFACTURER: Thomson Consumer Products Corp.
ADDRESS: 5731 West Slauson Ave., Suite 111, Culver City, CA 90230; (213) 568-1002
HARDWARE REQUIREMENTS: IBM PC and compatibles with a 4.25-inch half-slot
PRICE: $495

You've decided that you want an EGA card so you can get color and graphics on your IBM PC or compatible. Maybe you're interested in buying educational software for your kids, playing a few games, or impressing your business associates with dazzling graphics presentations. Or maybe you already have a CGA card—but want an EGA card to increase your computer's color and resolution.



You can plug a mouse directly into this Thomson EGA Ultra Version card.

When you start shopping around for an EGA card, be sure to look at the Thomson EGA Ultra Version. Like all EGA cards, the Thomson EGA Ultra Version will run virtually every software product that requires a Monochrome Graphics Adapter, Hercules Graphics Adapter, Color Graphics Adapter, or Enhanced Graphics Adapter.

But the adapter stands out from its competition in other ways. First, it includes a Microsoft Mouse Inport, which allows you to plug a mouse directly into the EGA card. If you use a mouse, this feature will save a slot on your computer for something else. And your mouse will work just as well through this card as it does through its own card.

Second, the Thomson EGA Ultra Version comes with special drivers to speed up Microsoft *Windows*, *AutoCAD*, Lotus *1-2-3*, and *Symphony*. Also included is TEGAU, a program that will blank your screen after a specified period of time without keyboard action. The program also

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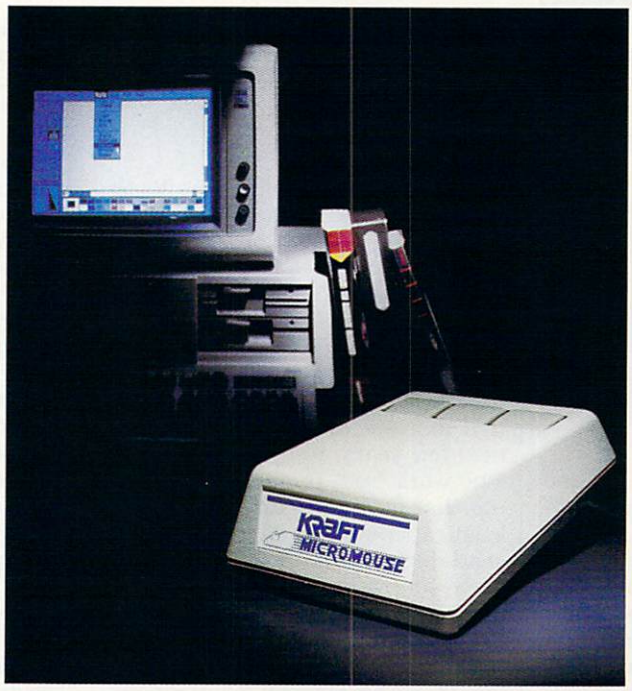

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lets you change among different emulations (Monochrome, Hercules, Monochrome with Greyscale, Color/Graphics, and Enhanced Graphics) and among different monitors.

If you intend to use *Microsoft Windows* or a mouse, then you should seriously consider this card.

—PASQUALE CIRULLO

CIRCLE READER SERVICE 103

TAC3 and TAC5 Joysticks

MANUFACTURER: Suncom
ADDRESS: 260 Holbrook Drive, Wheeling, IL 60090; (312) 459-8000
HARDWARE REQUIREMENTS: Amiga, Atari 800/XL/XE, Atari ST, Commodore 64/128, and TI-99/4A (with an adapter)
PRICE: $16 (Tac3), $20 (Tac5)

The TAC5 clicks when you move it.

To an obsessive game player like me, there are few things in life more important than a good joystick. (A great new game is one of them.) Above all, a joystick should be comfortable. If it pinches or is too heavy or too stiff, it tires me long before I'm ready to turn off the computer. Suncom's Tac3 and Tac5 are two joysticks that won't tire me out before the game does.

The lightweight and easy-to-move Tac3 features a wide base with two fire buttons and a tall, molded stick with a third fire button at the tip. The button placement makes the Tac3 accommodating to more people. I prefer to use the fire button on top of the stick, but some of my friends like to use the button on the base. And because there are two buttons on the base, lefties aren't at a disadvantage.

On the outside, the Tac5 joystick is almost identical to the Tac3. The three buttons are present, and the controller is just as light. The difference between the two isn't obvious until you move the stick. The Tac5 features Suncom's Micro-Switch technology, which basically means that you can feel and hear the stick click into position when you move it.

However, the fact that the Tac3 and Tac5 joysticks are lightweight and loose may be a drawback, primarily when it comes to durability. The joysticks feel somewhat flimsy and the stick does twist noticeably in the base. But this didn't concern me as much when I remembered that the Tac3 carries a two-year warranty, and the Tac5 is guaranteed for a lifetime.

—DAMON OSGOOD

CIRCLE READER SERVICE 104

HOME-OFFICE EQUIPMENT

Canon Faxphone 10

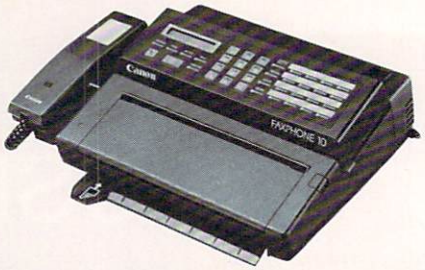
MANUFACTURER: Canon U.S.A., Inc.
ADDRESS: One Canon Plaza, Lake Success, NY 11042
PRICE: $1,995

This past summer, *BusinessWeek* ran a story telling its readers about the growing number of inexpensive facsimile machines making their way into homes. The headline asked, "A Fax in Every Foyer?"

While most of us would answer that question with a definite "no," the number of fax units in homes *will* increase dramatically during the next few years. Indeed, many people who work from their homes are finding that facsimiles are the fastest, least expensive, and *easiest* way to send documents and images to other places of business. *(See the article on facsimile phones in this month's The Office at Home department.)*

The first company to introduce a fax phone specifically for home and small business use was Canon. The Canon Faxphone 10, introduced last year, is a combination G2/G3 facsimile machine, telephone, copier, and clock/calendar. It's so simple to operate that I figured out how to transmit a document in less than 10 minutes with minimal manual reading. (Setting the time and date on the LCD display was the hardest thing I had to do.)

To send something, you simply insert one to five pages of material face down into a tray, dial the number of the receiving unit, listen for a beep, and press start. And presto, in goes the paper into one slot and out it comes from another. That's it. Receiving material is even easier. Just



The Canon Faxphone 10 is equipped with a facsimile machine, a telephone, a copier, and a clock/calendar.

leave the machine on automatic; people can send you documents when you're not even there. Even Federal Express isn't that accommodating.

Federal Express isn't nearly as fast, either. The Faxphone 10 will send a one-page document to another Canon machine in 17 seconds, to another G3 facimile in 20 seconds, and to a G2 unit in three minutes or less.

With the Canon Faxphone 10, documents that are transmitted must be between 5.9 inches and 8.5 inches in width and longer than 3.6 inches. To get around these limitations, you just have to enlarge or reduce your material or place the document or material into a document sleeve (included with the unit). Also, transmission time to any G2/G3 unit can't exceed 16 minutes.

The attractive, gray machine includes a mute button, speed dial and auto-redial capabilities, and a hold button that will play a silly computerized version of "Lullaby" for the other party.

About the only thing that disappointed me was the machine's copying capabilities. Although easy to operate, the copier will make only one copy at a time and only on thermal paper. While this is fine if you want to make a single copy of a document for your own records, you'll need a separate copier for any kind of substantial use.

If you exchange materials with companies that have fax machines, you might want to consider one for yourself. Faxphones are easier to use than modems and can send and receive pictures. And sending materials via fax is faster and less expensive than express mail. While today's prices make faxphones prohibitive for some, their costs are sure to drop over the next year or so.

—BERNADETTE GREY

CIRCLE READER SERVICE 105

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CIRCLE READER SERVICE 26

Signet 100

MANUFACTURER: Royal Consumer Business Products
ADDRESS: 200 Sheffield Street, Mountainside, NJ 07092; (201) 789-2800
PRICE: $600

Royal Consumer Business Products recently introduced its Signet series of electronic typewriters, ranging in price from $300 to $600 and targeting everyone from students to home-business owners. This summer, I gave Royal's top-of-the-line model, the Signet 100, a run for its money and was quite pleased with the machine's performance. With its impressive word-processing features and spelling checker, it made my own electric typewriter seem as primitive as a chisel and stone.

The Signet 100 has 12K of memory and an 80,000-word dictionary.

Many things about the Signet 100 reminded me of a computer. It comes with 12K of memory and allows you to store files. And the keyboard has a light touch that feels more like my computer than my typewriter. (To limit my typos, I had to readjust my pecks.)

What impressed me most was ProSpell, the typewriter's 80,000-word Merriam Webster-based dictionary. ProSpell checks the spellings of words as you type; a small beep alerts you to words that aren't in its dictionary. (You can adjust the volume of the beep.) ProSpell lets you add frequently used words—that it doesn't recognize—to its dictionary.

The Signet 100 produces text in 10, 12, and 15 characters-per-inch (cpi) modes and can justify margins and print in italics and bold. The typewriter also has a 20-character liquid crystal display (LCD) that allows you to double-check for spelling, punctuation, and spacing mistakes before printing.

The machine's other features include full-line correction memory, full-line or word underlining, automatic centering, automatic carrier return, decimal tabulation, index up and index down, and automatic shut-off whenever the top is opened (COVER OPEN appears on its LCD).

The Signet 100 comes with an instruction manual that includes a diagram of the typewriter and clearly labels the machine parts to facilitate an easy, quick setup. There's also a section that depicts the keyboard layout and describes the keys and their respective functions, such as the DECIMAL TAB KEY, which automatically aligns all numbers by their decimal points.

The Signet 100 has a full 90-day warranty and a limited one-year warranty. There are 302 service centers nationwide. —STEPHANIE ESTERS

CIRCLE READER SERVICE 106

Copy-Jack 96 Handycopy Machine

MANUFACTURER: PLUS USA Corporation
ADDRESS: 3 Reuten Drive, Closter, NJ 07624; (201) 767-6950; 17980 S. Savarona Way, Carson, CA 90746 (213) 321-9419
PRICE: $450

It happens to just about all of us now and again: You need to make a copy of something, but you're nowhere near a copy machine.

You might be out relaxing at a poolside, reading *National Geographic*. Or on the commuter railroad reading the end-of-day stock tables. Or even at your parents' house on a mid-April evening, helping them complete their tax return.

What do you do? Tear out pages from *National Geographic*? Jot down all the stock information on the back of envelopes? Send out the tax return without making a copy? Or hop in the car in search of an open library or copy shop?

These are the scenarios I pose to friends who question the usefulness of copiers that fit in briefcases and purses. Portable copiers are a neat concept from Plus Corporation. In April 1986, the company introduced a product called the Copy-Jack 40, and it recently introduced the Copy-Jack 96. A short while ago, I took a look at the 96.

This hand-held copier is battery-powered and can make four-inch wide copies of documents.

The Copy-Jack 96 is a battery-powered copier that weighs less than two pounds and comes with a recharger, a carrying case, and a strap. (You can use the Copy-Jack 96 for just 20 minutes before an eight-hour recharging session is needed.)

To make a copy: (1) place the copier at the beginning of what you want to copy, (2) secure the end of the paper and the original so they don't move, and (3) firmly move the copier over the surface at a rate about three-eighths of an inch per second while holding down the copy switch. Sounds easy, doesn't it? It's not—especially if there isn't a flat surface nearby (for instance, when you're on a train or a bus).

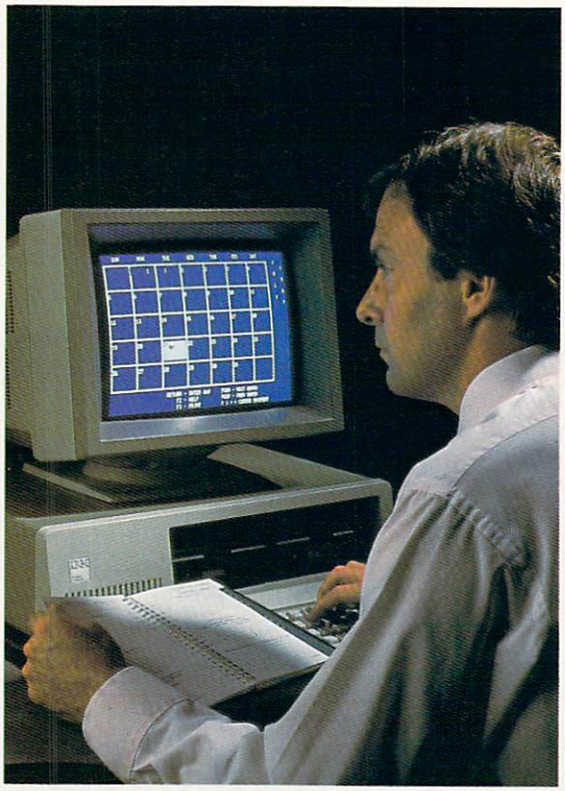
Unfortunately, while the Copy-Jack 96 is a nifty idea, I found it cumbersome, unreliable, and overpriced. The copier, which uses thermal paper, can produce only four-inch-wide copies. And unless you move slowly and steadily, the results are barely legible.

On top of this, the machine that I used repeatedly overheated in the middle of copying documents, and I had to wait for a couple of hours before it would work again. (A built-in battery protection device automatically shuts off the machine when it gets too hot.) There were times when I could have gone to a copy shop, had a long lunch, and returned home again, waiting for the copier to work.

The limitations of this copier make it overpriced and frivolous—especially when you can get a full-fledged personal copier for the same price. —BERNADETTE GREY

CIRCLE READER SERVICE 107

Organize Your Work! With The Complete Desktop Utility That Gives You Everything You Need.



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The **CALENDAR** keeps track of your schedule months in advance. Reminders of upcoming events keep you prepared for meetings and appointments, both on the day of the event and at a preset period of time before the event.

Jot down due dates, assignments, and personal tasks on the "TO-DO" LIST.

The **UTILITIES** option gives you an easy-to-use on-screen menu of DOS management commands. It allows you to format and copy disks, erase, rename, and view files without ever leaving *BetterWorking Desktop.*

BetterWorking Desktop can be RAM resident if you have at least 512K. So for example, if you are busy preparing a financial report using Lotus 1-2-3 and your boss calls to schedule a meeting, you can simply hit the hot key, schedule the meeting on your Calendar, hit the hot key again and you are back to work.

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CIRCLE READER SERVICE 47

SOFTWARE GUIDE

Welcome to FAMILY & HOME-OFFICE COMPUTING's Software Guide, the most comprehensive listing available of two dozen of the newest, most noteworthy, and/or best programs on the market. Our reviewers include families from all over the country who have judged the software according to the following criteria: long-term benefits and applications, adaptability, and advantages of using a computer for a given task. Programs have been evaluated and rated for their performance in each of the categories listed below. More detailed reviews follow the chart. Unless otherwise noted, all programs are in disk format, and minimum memory requirements are 48K for Apple II series, 48K for Atari, 128K for IBM PC/PC*jr* or compatibles, and 128K for Macintosh. "Atari" alone denotes the 800/XL/XE series. "C 64/128" means the software will run on both a C 64 and a C 128 computer in C-64 mode; "C 128" alone means the software will run only on that machine.

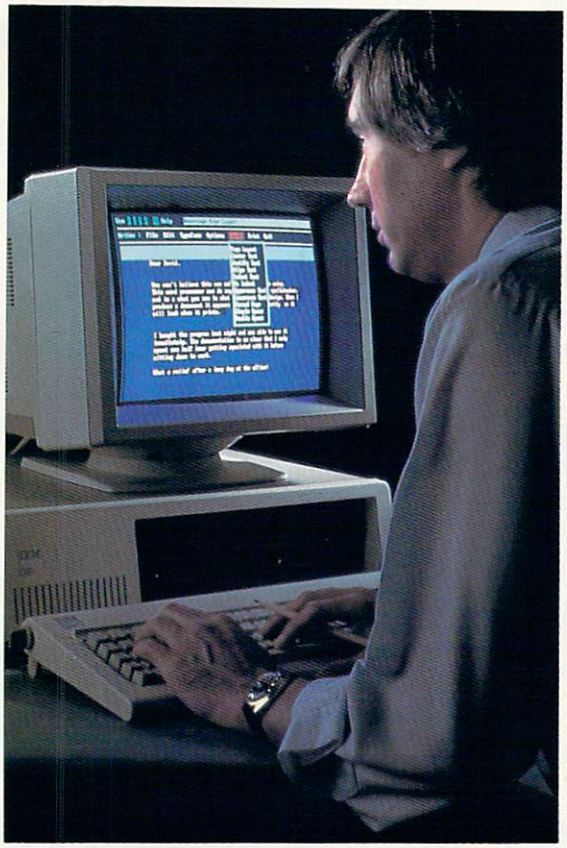
HOME BUSINESS & PRODUCTIVITY

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
DO-RE-ME Multisoft 120 E. 90th St., #5J New York, NY 10128 (212) 534-4047 $54 © 1987	Sophisticated features and an amazingly low price mark this integrated spreadsheet, word processor, and database. However, the documentation gets a bit technical when it comes to advanced functions. —SOLOMON	Apple IIe/IIc/IIgs. 2nd drive recommended. Hard drive optional.	Lifetime warranty. Not copy-protected. 30-day money-back guarantee.	★ ★ ★	★ ★	★ ★ ★	N/A	A	★ ★ ★ ★
DOUG CLAPP'S WORD TOOLS Aegis Development 2115 Pico Blvd. Santa Monica, CA 90405 (213) 392-9972 $80 © 1986	By searching for "suspect" words and phrases in documents, *Word Tools* can help writers say what they mean more clearly. It's most helpful if you already have a sense of what's needed to write well. —HALLERMAN	512K Macintosh. 2nd drive recommended.	90-day warranty. Not copy-protected.	★ ★ ★	★ ★	★ ★ ★	N/A	E	★ ★ ★
MAXTHINK MaxThink 44 Rincon Road Kensington, CA 94707 (415) 428-0104 $89 © 1986, 1987	A fine outlining program with more features than most—such as an alarm and a report generator. That makes it take more time to learn, but it's well worth the effort. Best for intermediate and advanced users.† —ZORNBERG	Reviewed on 320K IBM PC.* Also for Atari ST, 512K Macintosh. 2nd drive.	Unlimited warranty. Not copy-protected. 90-day money-back guarantee.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	N/A	D	★ ★ ★ ★
MULTIMATE ADVANTAGE II Ashton-Tate 20101 Hamilton Ave. Torrance, CA 90502 (213) 329-8000 $595 © 1987	This word processor is packed with special capabilities, such as a thesaurus and a minifiler that provides mail merge. The quantity of documentation is almost intimidating. Intended for professional use.† —HUNT	384K IBM PC.* 2nd drive. 640K, hard drive recommended.	90-day warranty. $20 thereafter. Not copy-protected.	★ ★ ★	★ ★	★ ★ ★	N/A	A	★ ★
SENSIBLE WRITER Sensible Software, Inc. 335 E. Big Beaver, #207 Troy, MI 48083 (313) 528-1950 $100 © 1987	With pull-down menus, multiple windows, mouse control, and an excellent tutorial, this word processor is both exceptionally easy and quite capable. Shows formatted pages clearly on-screen. —SOLOMON	128K enhanced Apple IIe/IIc/IIgs. 3.5-inch drive, mouse optional.	90-day warranty. $10 thereafter or for backup. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	E	★ ★
TEXTRA Ann Arbor Software 345 S. Division Ann Arbor, MI 48104 (313) 769-9088 $33 © 1986, 1987	This well-thought-out and well-documented word processor is flexible and fast. Unusual marketing. You can buy version 4, and then for a one-time fee, buy a subscription to future, updated versions.† —ROTTENBERG	256K IBM PC.*	60-day warranty. $5 thereafter. Not copy-protected. 60-day money-back guarantee.	★ ★ ★	★ ★ ★	★ ★ ★ ★	N/A	A	★ ★ ★ ★
VIZAWRITE PC Progressive Peripherals & Software, Inc. 464 Kalamath St. Denver, CO 80204 (303) 825-4144 $50 © 1984, 1987	The extras in this word processor? You can edit several documents at a time, do mail merge, and choose from drop-down menus and function-key commands. A spelling checker, too, but that and the rest of the program run exceptionally slow. —SUMMERS	256K IBM PC.*	Unlimited warranty. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	E	★ ★ ★

RATINGS KEY O Overall performance: **D** Documentation: **EH** Error-handling: **GQ** Graphics quality: **EU** Ease of use: **V** Value for money: ○ Poor: ★ Average: ★★ Good: ★★★ Very Good: ★★★★ Excellent: N/A Not applicable: E Easy: A Average: D Difficult: † Longer review follows chart

*Titles listed for the IBM PC/PC*jr* will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

"What You See Is What You Get" With The Better Working Wordprocessor



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HOME BUSINESS & PRODUCTIVITY

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
WRITENOW T/Maker Company 1973 Landings Drive Mountain View, CA 94043 (415) 962-0195 $175 © 1986	Advanced features in this word processor include multiple columns of text, footnoting, and the ability to put graphics in paragraphs with the text wrapped around them. It's fast, too, but it does not support cursor keys. —MORRIS	Macintosh. 512K required for spelling checker.	90-day warranty. Not copy-protected.	★ ★ ★	★ ★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
WRITER'S CHOICE ELITE Activision 2350 Bayshore Parkway Mountain View, CA 94043 (415) 960-0410 $90 © 1986	And this word processor can print text and graphics in color, but when I tried to print a color document in black-and-white mode, the whole system hung up. Created classy looking documents, but not yet recommended. —FRANK	512K Apple IIgs. 3.5-inch drive.	90-day warranty. $7.50 thereafter. Limited backup (key disk required).	★ ★	★ ★	★	★ ★ ★	A	★

EDUCATION & CREATIVITY

AWARDWARE Hi Tech Expressions, Inc. 1700 N.W. 65th Ave., #9 Plantation, FL 33313 (305) 584-6386 $15 © 1987	What? In addition to award certificates, AwardWare prints letterheads, memos, tickets, coupons, and more in five different font styles and 20 graphics borders—and it prints them well for only 15 bucks? That's right. —ZORNBERG	Reviewed on C 64/128. Also for 64K Apple, Atari, 256K IBM PC.* CGA (IBM).	90-day warranty. $5 thereafter. Not copy-protected.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★	E	★ ★ ★ ★
BUYER BEWARE MCE Inc. 157 S. Kalamazoo Mall #250 Kalamazoo, MI 49007 (616) 345-8681 $60 © 1987	Helps teenagers become informed consumers by teaching them about fraudulent sales practices and consumer protection. However, it would have been more effective as a simulation instead of a tutorial. —SOLOMON	Apple. Color monitor recommended.	30-day warranty. Includes backup disk. 30-day money-back guarantee.	★	★ ★	★ ★ ★	★	E	★
FAST-TRACK FRACTIONS DLM One DLM Park Allen, TX 75002 (214) 248-6300 $46 © 1986	Learning about least common denominators and the multiplication and division of mixed numbers comes to life with the race-car motif employed here. A successful program that also tracks a student's progress. —ELTGROTH	64K Apple. Color monitor recommended. Printer optional.	6-month warranty. $15 thereafter or for backup. 30-day money-back guarantee.	★ ★ ★	★ ★ ★ ★	★ ★	★ ★	E	★ ★
GALILEO Infinity Software, Inc. 1144 65th St., Studio C Emeryville, CA 94608 (415) 420-1551 $60 © 1987	Put the stars at your fingertips with astronomical software that uses realistic color and brightness to indicate the positions of bright stars, planets, and several hundred deep-sky objects.† —SUMMERS	512K Amiga. 2nd drive optional.	90-day warranty. $10 thereafter. Not copy-protected.	★ ★ ★ ★	★ ★	★	★ ★ ★ ★	E	★ ★ ★
SPACE M+A+X Final Frontier Software 18307 Burbank Blvd.,#108 Tarzana, CA 91356 (818) 996-0431 $60 © 1986	Players get an administrator's eye view of the complexities of space-station construction in this highly realistic project management simulation. Challenging, even for someone with an M.B.A.† —SUMMERS	192K IBM PC.* CGA. 2nd drive, color monitor, joystick, printer recommended.	90-day warranty. $15 thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★	A	★ ★ ★
STICKYBEAR PARTS OF SPEECH Weekly Reader Family Software/Optimum Resource Inc. 10 Station Place Norfolk, CT 06058 (203) 542-5553 $40 © 1986	Four activities at four levels of difficulty make this one of the more enjoyable ways we've seen for practicing grammar. One drawback, though. When a word is used for more than one part of speech, the program accepts only one answer. —SOLOMON	Reviewed on Apple. Also for IBM PC.* CGA or EGA (IBM only). Color monitor recommended.	90-day warranty. $10 thereafter or for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★	E	★ ★

RATINGS KEY **O** Overall performance; **D** Documentation; **EH** Error-handling; **GQ** Graphics quality; **EU** Ease of use; **V** Value for money; ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

*Titles listed for the IBM PC/PC*jr* will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

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ENTERTAINMENT

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	PS	GQ	EU	V
CAULDRON Broderbund Software 17 Paul Drive San Rafael, CA 94903 (415) 492-3500 $30 © 1987	You'd better have some free time when you start playing, since the two games on this one disk are both addictive. Flying witches and bouncing pumpkins combine with challenge and originality.† —LANGENDOEN	C 64/128. Joystick. Color monitor recommended.	90-day warranty. $7.50 thereafter. $10 for backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★ ★
CHUCK YEAGER'S ADVANCED FLIGHT TRAINER Electronic Arts 1820 Gateway Drive San Mateo, CA 94404 (415) 571-7171 $40 © 1987	By mixing flying skills with daring aerobatics and offering an incredible array of options, this game offers the best and most exciting flight simulation we've ever seen. Different games and different planes add to the fun. A "must buy."† —DELSON	IBM PC.* Color monitor recommended. Joystick optional.	90-day warranty. $7.50 thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★	A	★ ★ ★ ★
GRIDIRON! Bethesda Softworks, dist. by Electronic Arts (see above for address and phone) $50–$60 © 1986, 1987	Action-filled football that doesn't require phenomenal hand-eye expertise to be fully enjoyed. With 5 levels of ability, and you can modify any of the 40 plays in the game's standard repertory. Superb. —DELSON	Reviewed on Amiga. Also for Atari ST. Joystick or 2nd mouse optional.	Unlimited warranty. $10 for backup (Atari); not copy-protected (Amiga).	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★	A	★ ★ ★
GUDERIAN Avalon Hill Game Company 4517 Harford Road Baltimore, MD 21214 (301) 254-9200 $30 © 1987	This war game is based on the German Army's invasion of Russia in 1941. Using a joystick, gamers can move play along quickly. Some awkwardness, though, such as determining where units retreat. —DELSON	Reviewed on Apple. Also for Atari, C 64/128. Joystick.	30-day warranty.	★ ★	★ ★	★ ★ ★	★ ★	A	★ ★
JUMP JET Eurosoft International 114 East Ave. Norwalk, CT 06851 (203) 838-9890 $20 © 1985	You're the pilot of a carrier-based jet doing take-offs and landings, along with flying and fighting. Falls into void between simulation and arcade—not enough detail for one, not enough action for the other. —LANGENDOEN	C 64/128. Joystick.	90-day warranty. $10 thereafter. Not copy-protected.	★	★ ★	★	★	A	★ ★
MAC RACQUETBALL Practical Computer Applications 1305 Jefferson Highway Champlin, MN 55316 (612) 427-4789 $60 ©1987	Realistic digitized players and sounds lift this sports simulation above the norm. Yet the game can be harder to play than the actual sport. Two people can play together on separate Macs using modem or cable. —HALLERMAN	1MB Macintosh. 800K drive.	Unlimited warranty.	★ ★ ★	★ ★ ★	★ ★	★ ★ ★ ★	D	★ ★
Q-BALL Mindscape, Inc. 3444 Dundee Road Northbrook, IL 60062 (312) 480-7667 $30 © 1987	Would you like to play pool or billiards inside of a three-dimensional, rotating cube? You can try with *Q-Ball*, but you'd better take your time, because this game is hard! The difficulty detracts from the potential fun. —HALLERMAN	Atari ST. Color monitor.	90-day warranty. $16 thereafter or for backup. 10-day money-back guarantee.	★ ★	★	★ ★	★ ★ ★	D	★ ★
STREET SPORTS BASEBALL Epyx, Inc. 600 Galveston Drive Redwood City, CA 94063 (415) 366-0606 $40 © 1987	With a tire for second base and a cardboard box for first, this flavorful baseball game takes place in a vacant lot. But no real feeling for the sport is conveyed, and the novelty wears thin quickly. —LANGENDOEN	Reviewed on C 64/128. Also for Apple, IBM PC.* Joystick.	90-day warranty. $5 thereafter.	★ ★	★ ★	★	★ ★	E	★
SUB BATTLE SIMULATOR Epyx, Inc. (see above for address and phone) $40 ©1987	Featuring historically accurate submarines and scenarios, this simulation delivers great depth and scope. Four difficulty levels mean long-term fun.† —LANGENDOEN	Reviewed on Atari ST. Also for Amiga, Apple IIe/IIc, 512K Apple IIGS, C 64/128, IBM PC,* 512K Macintosh. Joystick. Color monitor recommended.	90-day warranty. $5 thereafter.	★ ★ ★	★ ★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★

RATINGS KEY **O** Overall performance; **D** Documentation; **PS** Play system; **GQ** Graphics quality; **EU** Ease of use; **V** Value for money; ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

*Titles listed for the IBM PC/PC*jr* will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

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SOFTWARE REVIEWS

On the following pages, you'll find in-depth reviews of some of the programs listed in the Software Guide. Refer back to the Guide on page 78 for information such as backup policies and addresses of software publishers.

HOME BUSINESS & PRODUCTIVITY

MaxThink

HARDWARE REQUIREMENTS: Atari ST, 320K IBM PC, 512K Macintosh.
PUBLISHER: MaxThink
PRICE: $89

Remember your school days? Teachers were always telling you to construct a complete outline to make it easier to write reports. Most of us considered this a nuisance and only did it if the outline had to be handed in. But in truth, outlining before writing helps to organize and solidify your ideas, which also makes it more difficult to stray from your subject.

Enter *MaxThink*, an outliner (the publisher calls it an "idea processor") that can make writing better by helping you to brainstorm. While brainstorming, you can enter your thoughts as they come to you, and later move these ideas into the order you prefer. With *MaxThink* you insert and delete ideas, create main headings and as many subheadings as you need, and collapse or expand the outline's framework at will. But this is just some of the help *MaxThink* offers. Since you'll often be entering ideas without regard to order, the program allows you to reorganize the outline according to your needs.

Among *MaxThink*'s other options is an alarm feature. For example, I set it to time intervals of 10 minutes, which reminded me to save my work. Should your outline include database-style headings such as Name, Address, and so forth, you can invoke the report generator, which helps you create organized printouts. If you're concerned about how often specific words appear in an outline, the reference command will tell you.

There is a command line at the bottom of the screen. Novices can invoke commands by pressing the space bar to highlight the desired command and ENTER to select it. More experienced users can simultaneously press the first letter of the desired command and ENTER to execute their choices.

While *MaxThink* is supposed to help you think before you write, you must first become familiar with the program before you can reach this goal. Until you're familiar with it, the program can be cumbersome due to its complexity; and it also can hinder, instead of help, writing due to breaks in your concentration as you search for the correct command.

If you've been thinking of getting an outliner, consider *MaxThink*. Note, though, that novices might find the complex options too difficult to benefit their writing. The language used in the manual assumes some degree of computer literacy, as does the program itself. For someone already seasoned in computer usage, though, *MaxThink* can prove to be an excellent choice. —JUDITH ZORNBERG

MultiMate Advantage II

HARDWARE REQUIREMENTS: 384K IBM PC.
PUBLISHER: Ashton-Tate
PRICE: $595

The size of the package is your first clue. Any program that comes in a box the size of a large dictionary must be loaded with features.

MultiMate Advantage II lives up to your expectations. Don't let the size of the box intimidate you, though, since most of the package is documentation. Ashton-Tate has managed to pack overlapping novice, intermediate, and advanced courses on how to use *MultiMate* into the same box. The company has included six manuals with a two-inch ring binder and three additional spiral-bound reference books. When I first saw all this documentation, I was a bit overwhelmed. Although the manuals are not as well-marked as they could be, I found that by skimming the Table of Contents, I was able to find the information I needed.

The word processor's features range from the ordinary—such as cut-and-paste, bold text, and footnotes—to the exceptional, like its thesaurus or its ability to create libraries of stock phrases and link them with your documents. Realizing that it would be hard to remember all of the more than 300 commands, the publisher has taken elaborate steps to make it easy to use. A large plastic template that fits above your keyboard is included, as well as a quick reference card. The most unusual aids are stick-on key identifiers that you paste on the top of your keys.

If you don't want to spend a lot of time squinting at those stick-ons, just press ALT-L, which gives you a set of command menus and provides access to additional commands. For example, "layout" on the top menu has "document reorganization" as a subheading. If you select that, a screen appears that allows you to repaginate your document—specify automatic, user specified, or no hyphenation; assign numbers to sections of the document to create an outline; or create a Table of Contents. I'm glad the publishers provided all of this help, because it's not always intuitive which key combinations correspond to a particular command. For instance, I would not expect ALT-Z to initiate bold printing, but it does.

In addition to the word processor, *MultiMate Advantage II* includes several support programs. I particularly like the thesaurus. In addition to providing a list of synonyms, it shows a word's part of speech and gives its definition. If the definition isn't the one you want, another will be presented with a new set of synonyms. The spelling checker can be used while working in a document or it can be used after you've saved your text. However, when a word isn't in the dictionary, the first letter flashes—but the flashing isn't turned off automatically after you correct the spelling. A separate command is required; this seemed like an unnecessary step. Another included module is called On-File. This minifiler appears on the screen as a box of color-coded index cards. These cards can hold about 600 characters on each side and can be sorted by subjects and key words as well as by color.

MultiMate Advantage II is definitely feature packed, but its price is a bit steep. Also, the publisher says it can be run using two floppy drives, but I think you should really have a hard disk. Because of this, I think *MultiMate* would be best-suited for an office or small business. To realize the full benefits of your purchase, you must spend quite a bit of time with the program. Therefore, I wouldn't recommend it for any office that has a high turn-

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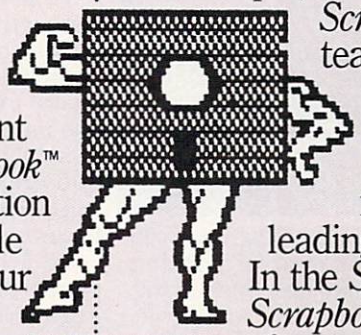

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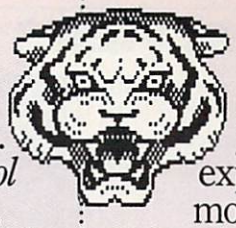

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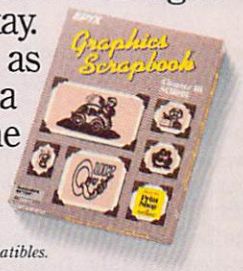

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CIRCLE READER SERVICE 16

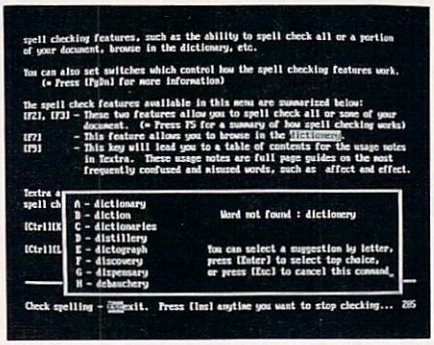
over of staff. After you've spent your money, you need to spend time with the word processor to best capitalize on your investment. —BROOKS H. HUNT

Textra

HARDWARE REQUIREMENTS: 256K IBM PC.
PUBLISHER: Ann Arbor Software
PRICE: $33

Textra is a well-thought-out and well-documented word processor. Its strongest features are flexibility and speed. Almost every function has two or three options. For example, you can customize the editing screen with a ruler line at the top, the bottom, or eliminate the ruler line completely. If you want, you can perform editing commands through menus or memorized keystroke combinations. The cursor moves across the screen quickly, and various functions such as search-and-replace occur almost instantaneously.

Printing with *Textra* is extremely easy. The print menu is clearly designed with choices for printing an entire document, specific pages, or a



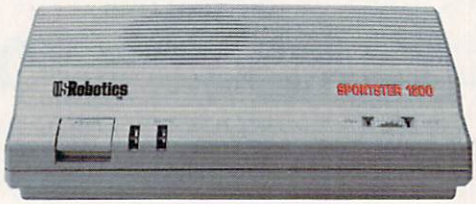
file directly from disk. There is even a convenient command for printing envelopes—a tricky task with many word processors.

The main drawback to *Textra* is that when you write, you must end each paragraph with the command CTRL-P or insert a blank line between paragraphs. Otherwise, you run the risk of accidentally reformatting your entire text into one solid block of prose. If you're writing a document where blank lines between paragraphs aren't appropriate, entering CTRL-P over and over again is extremely annoying—although, eventually, it becomes habitual. Other drawbacks? *Textra* allows only one header and footer, and there is no macro function nor is there mail merge to create form letters (although future updates promise one).

On the other hand, *Textra* costs only $33, and it performs as well as word processors that cost five times as much. Besides giving it an unusually low price, the makers of *Textra* are marketing the product in an unusual fashion. You can buy the latest version of *Textra*, version 4, and for an additional $40 receive updates as they become available (you can try the product out first and send in the extra money later).

The first of such updates, Winter 86/87, includes an excellent spelling checker as well as a DOS access command. With DOS access, if you want to save a file and don't have a formatted disk handy, you can leave *Textra*, format a disk, then return to *Textra* right where you left off and save your file.

For a beginner, *Textra* may take a little effort to learn. Although the



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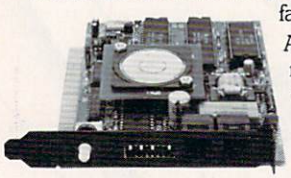

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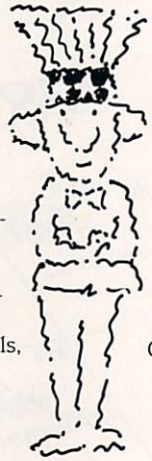

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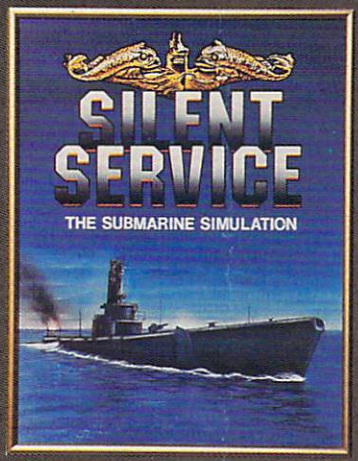

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CIRCLE READER SERVICE 29

manual is very well-written and help screens are accessible at any time, the program is so full of possibilities, some confusion is bound to crop up. But without question, *Textra* is an excellent buy. However, if you're just starting out with word processors, you'll undoubtedly need to make a few calls to the company's tech-support hotline (which isn't toll free). I would also recommend buying the subscription version of *Textra*. The latest improvements are worth the extra money and the publisher seems sincerely interested in regularly upgrading its product. You may grumble and groan while learning *Textra*, but its flexibility makes it the kind of word processor you'll grow to love. —DAVID ROTTENBERG

EDUCATION & CREATIVITY

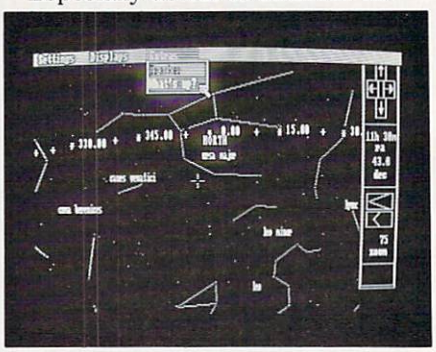
Galileo

HARDWARE REQUIREMENTS: 512K Amiga.
PUBLISHER: Infinity Software, Inc.
PRICE: $60

One of the most exciting moments in my life was the night a few months back when I trained my new telescope on a bright blip in the sky, peered through the viewfinder, and saw Saturn, complete with rings, gazing back at me. The telescope soon began to gather dust, though, as I dug through books and magazines trying to decide what to look at on those rare nights when the New Orleans haze cleared enough to let me see something. What I needed was *Galileo*, a program that puts the stars at your fingertips.

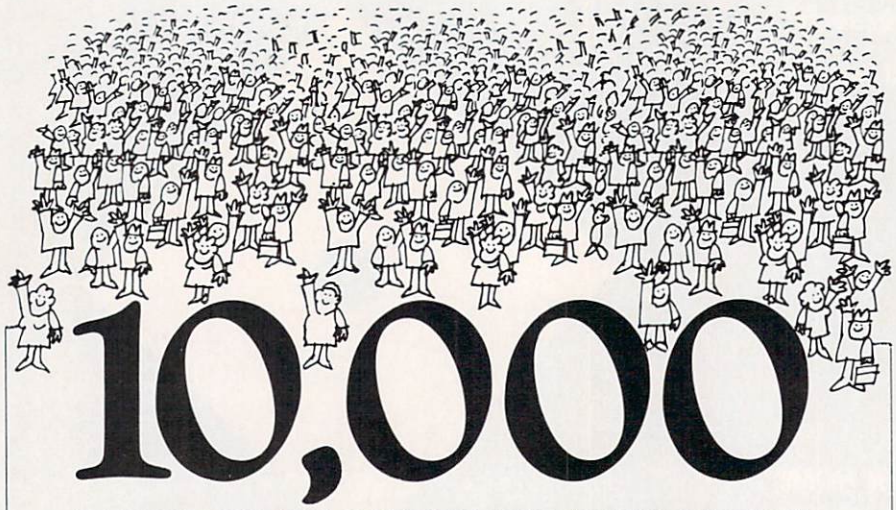
Galileo uses realistic color and intensity to indicate bright stars, planets, and several hundred deep-sky objects such as galaxies and nebulae. It offers a local view, keyed to the time and location you select, or a nonspecific planetarium view. You select the field of view and direction and view the sky with or without planet and constellation names.

Especially useful to amateur astronomers are features that tell you where to find Jupiter (or any planet) on a given day or that identify a particular stellar object. The program helps you find the object in the real night sky by giving you the altitude and azimuth of the selected object as well as its declination and right ascension. The manual explains what these and other astronomical terms mean and includes a wealth of basic facts for the beginner. The manual could have been made easier to use by the inclusion of an index and command reference section, but it's otherwise a good, if brief, introduction to astronomy.



Galileo is a wonderful teaching tool. There's a flash card option that tests your knowledge of the constellations, but more important are the program's simulations. Two tracking features let you watch the progress of the moon and planets, making it easier to understand planetary conjunctions, eclipses, and orbital oddities such as retrograde motion. You can relive an eclipse of the Sun or watch Venus change phases.

Whether you're an experienced



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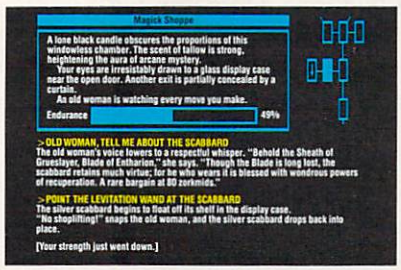
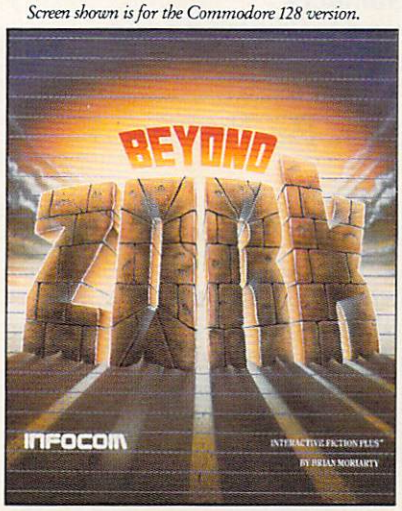


One glance at Beyond Zork *will show you that it's unlike any interactive story you've seen before. On-screen mapping. Window displays. A character that grows in strength and power. You get all the excitement of role-playing games, skillfully blended with the fabulous puzzles and award-winning prose of Infocom's interactive fiction.*

Screen shown is for the Commodore 128 version.



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CIRCLE READER SERVICE 8

sky-watcher who wants a quick way to locate NGC 6960 or a parent who wants to teach a youngster to love the stars, *Galileo* is a must-buy. It's the next best thing to being there.

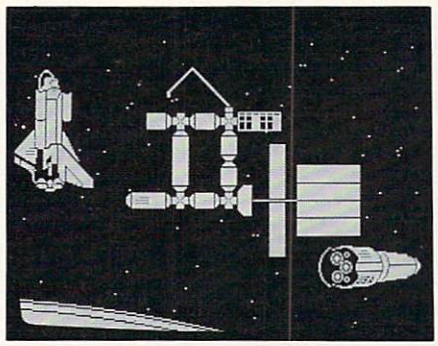
—TAN A. SUMMERS

Space M+A+X

HARDWARE REQUIREMENTS: 192K IBM PC.
PUBLISHER: Final Frontier Software
PRICE: $60

All hands stood by watching anxiously as the assembly crew painstakingly maneuvered the solar panel into place. A previous effort had resulted in disaster when the panel lurched out of control and crashed into the docking port, seriously injuring two crew members. Suddenly the ship's computer played a tinny rendition of a Sousa march—docking had been successful, and the space station was at last operational. The ship's intercom was suddenly filled with static as cheers overloaded every receiver.

"I told you to read all of the instructions before you started," said



Mission Control's mother.

"I did," Control insisted. "There was so much to read that I forgot that part."

Fortunately for the United States's space program, *Space M+A+X* is just a game. A highly realistic project-management simulation, it gives players an administrator's eye view of the complexities of space-station construction. The 130-page manual that overwhelmed our 12-year-old Mission Controller is a project summary that acquaints you with the space station's objectives. It also provides suggestions for optimal construction and operation procedures (without which you can't win).

Unfortunately, *Space M+A+X*'s realism is bought at a price. Information about containerless processing and solar electricity precede instructions for manipulating equipment. Players accustomed to load-and-go software will crash many a module before getting to that point.

Is it educational? Yes. *Space M+A+X* provides not only an in-depth look at the purpose of the shuttle program, but also gives realistic practice in project management. It's even used in college courses. Is it entertaining? Yes again. Once we got the hang of docking modules without crashing, several of us played for days trying to improve our scores. Is it challenging? Are you kidding? We ran out of money before our station was fully operational every time. We recommend this program to bright teens and patient adults—and it couldn't hurt to have an M.B.A.

—TAN A. SUMMERS

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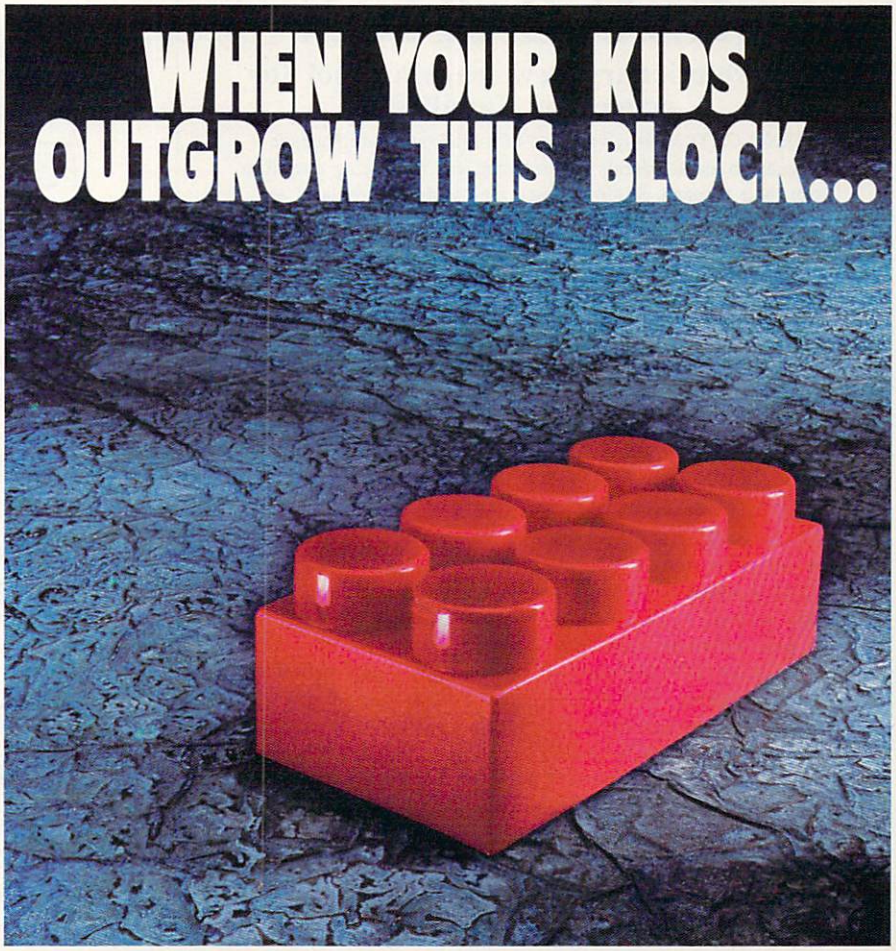

SOFTWARE REVIEWS

ENTERTAINMENT

Chuck Yeager's Advanced Flight Trainer

HARDWARE REQUIREMENTS: 256K IBM PC.
PUBLISHER: Electronic Arts
PRICE: $40

One of America's most popular living folk heroes is Air Force General Chuck Yeager, the first man to break the sound barrier and holder of numerous records for his other daring tests of America's airborne arsenal in the 1950s and 1960s.

That's why it was a real coup to get General Yeager's help in designing this new flight simulator program. By combining the flying skills of the still-superb *Flight Simulator II* with daring aerobatics, and offering an incredible array of options, this is by far the most exciting simulation of flying we've yet encountered.

You begin by deciding which of 14 planes to fly, including biplanes; light-training aircraft; World War I-, World War II-, Korean-, and Vietnam-era fighters; modern jets; and even experimental aircraft. Each airplane has a different "feel" to its control yoke.

Each plane's instrumentation is also unique, which allows you to learn the less difficult ones and work your way into the really hard ones. Gauges and control options include indicators for heading, airspeed, altitude, vertical speed, and slip; monitors for brake, landing gear, power, flaps, and control surfaces; as well as switches for flaps, brakes, landing gear, and throttle. The program offers you 12 views, including a phenomenally exciting "chase plane" point of view which follows your aircraft through its paces so you can see exactly what you're doing.

In short, this program is a must for anyone who enjoys flying simulations. Playtesters came back to it again and again and could only be forcibly pried away from the joystick with the promise of more hours at future dates. They rated the game highly on all levels, including its beautiful 3-D scrolling graphics, its easy-to-learn control system, its well-written tutorial, and its "feel" of flying. One of the year's best.

—JAMES DELSON

Cauldron

HARDWARE REQUIREMENTS: C 64/128.
PUBLISHER: Broderbund Software
PRICE: $30

Recipe for *Cauldron*:

Mix one part challenge, two parts fun, a few pinches of originality, good graphics and sound, lots of action, and most important, a built-in sequel. Simmer, brew, program, and place on disk. Insert in disk drive and play, play, play . . . .

You, as a witch, must collect six ingredients so that you can brew a spell of invulnerability in your magic cauldron (where else?). This will enable you to overthrow the great Pumking, leader of pumpkins everywhere, and establish control over the world. First, you must fly across the land (on your magic broom, of course) and collect four keys that will allow entrance to the great un-

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CIRCLE READER SERVICE 13

derground caverns where the ingredients are to be found.

While *Cauldron* could stand alone, it doesn't. Provided on the same disk is *Cauldron II*, which is not the equal of *Cauldron*, but a step above.

Cauldron II begins with the premise that the witch has defeated the Pumking and has built a regal castle where her simple cottage once stood. She has, unfortunately, been corrupted by her power and now ruthlessly stomps out all opposition. In fact she has vanquished all her enemies with one exception. This is where you, a lone pumpkin warrior, step in.

The only forseeable problem that these games have is that once you solve both of them there isn't much else to do. Added levels of difficulty would have been a good addition. Fortunately, between the two games there are 192 different "rooms" to go through, and this alone makes solving them difficult. *Cauldron* is a good game. *Cauldron II* is a great game. Both are well-brewed.

—DAVID LANGENDOEN

Sub Battle Simulator

HARDWARE REQUIREMENTS: Amiga, Apple IIe/IIc, 512K Apple IIGS, Atari ST, C 64/128, IBM PC, 512K Macintosh.
PUBLISHER: Epyx, Inc.
PRICE: $40

Sub Battle Simulator delivers great depth and scope. You must strive to stay alive while trying to inflict maximum damage to the enemy, as you command historically accurate submarines from either the German or American naval forces of World War II. To succeed requires finding the right mix of bravado and discretion.

The game's greatest appeal lies in trying to find this mix. Although you will quickly learn that engaging destroyers in gunnery duels is foolish, there are countless other lessons that aren't so obvious. Is it better to stalk the enemy from 75 feet under, using sonar as your guide? Or is it more advantageous to brazenly charge on the surface?

You can explore these possibilities by either engaging in one of 60 missions or trying to last through the entire war. There is also a practice mode that allows you to refine your stalking and attacking routines.

Long-term playability and excitement are guaranteed with *Sub Battle Simulator* because of its four levels of difficulty. Level One gives such advantages as short reload and dive times, no weather effects, and inaccurate enemy gunners and pilots. But by the time you reach Level Three, you may find yourself in a stormy sea, unable to dive deeply because of hull damage, while airplanes equipped with depth charges bear down on you. And if you ever get tired of playing Level Four, it won't be because it's too easy.

There are, unfortunately, a pair of errors in the game that can result in your submarine running aground even though it shouldn't. This is especially aggravating when you embark on a full wartime command and are destroyed by crashing into a nonexistent land mass.

This problem notwithstanding, this game just might blow you out of the water.

—DAVID LANGENDOEN

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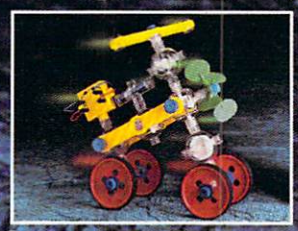

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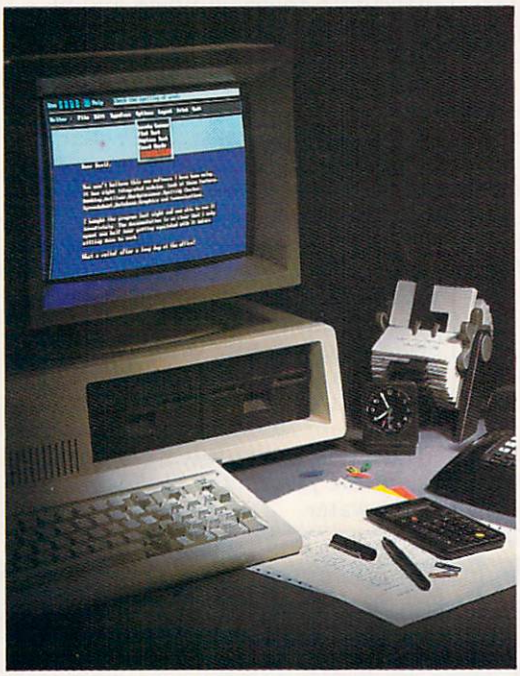

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The "What You See Is What You Get" format of our WORDPROCESSOR makes creating documents a breeze. What you see on the screen is what will appear when you print. The Wordprocessor features full editing and formatting functions such as cut and paste, word count, search and replace, directory listing, centering, text justification and settings for margins, tabs and line spacing. Design the layout of your document with headers, footers, automatic page numbering and an automatic table of contents. Special print features can be used, such as underlining, boldface, italics and compressed print. It's easy to set-up your printer... simply select your printer from the list of preset printer models.

The 100,000 word SPELLING CORRECTOR captures over 99% of spelling and typing errors and suggests correct spellings for misspelled words.

Eight-In-One's SPREADSHEET gives you Lotus 1-2-3 file import and export.

The DATA BASE can read and write in DBASE III compatible files. You can search by any field and create reports on the information on file.

Present your numerical analysis visually with our GRAPH program. Create bar charts, point and line graphs and pie charts.

Eight-In-One's COMMUNICATIONS program takes full advantage of the features of Hayes compatible modems.

Better Working Eight-in-One

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CIRCLE READER SERVICE 49

THE PROGRAMMER

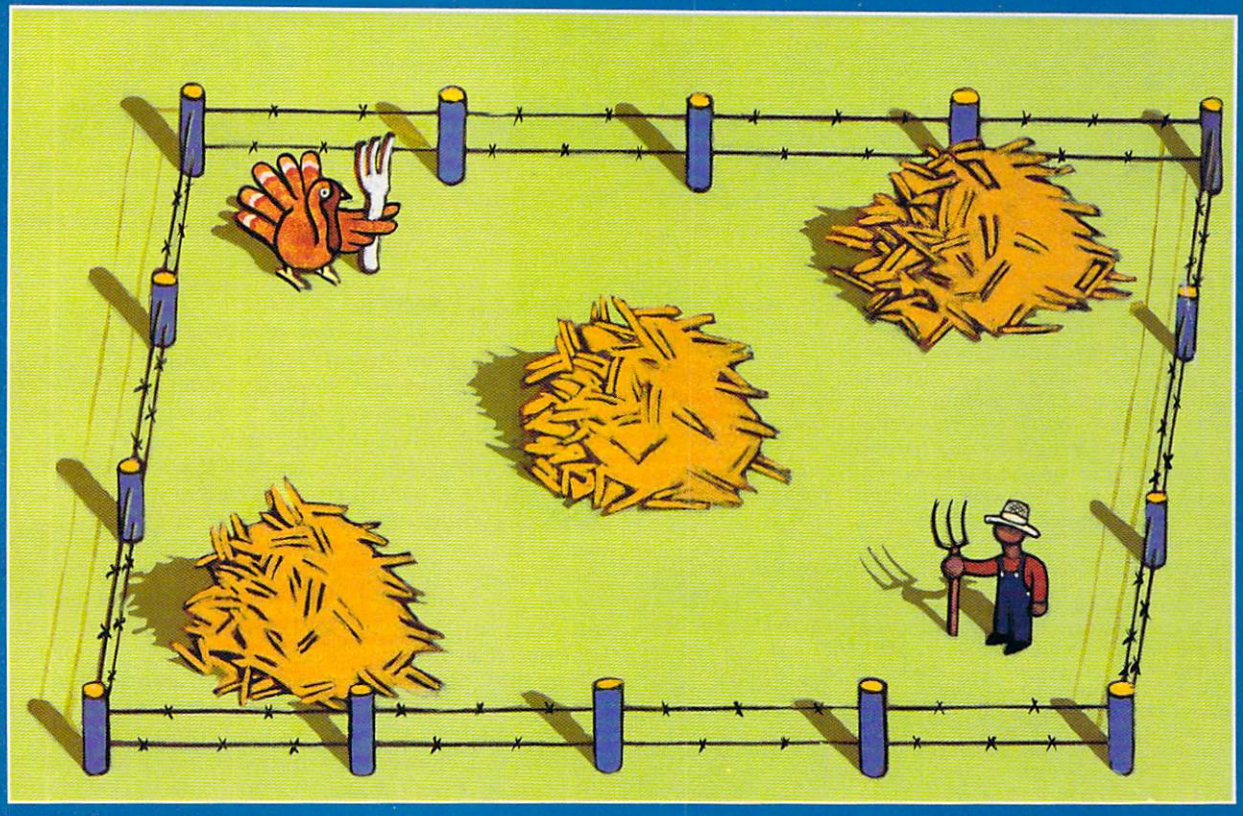

ILLUSTRATION BY BARTON STABLER

THIS MONTH

FYI
Page 96
Information about our programs, "Programming P.S.," and news for programmers.

PRODUCTIVITY PROGRAM
Page 98
Atari and Commodore translations of our useful *Home Inventory Manager* program.

THANKSGIVING PROGRAM
Page 110
It's time for the *Turkey's Revenge*! Farmer Fleetfoot has his work cut out for him this Thanksgiving as he tackles a two-ton turkey.

PUZZLE
Page 118
Clues and data for a Thanksgiving *Crossword Puzzler*.
Page 120
PLUS: The solution to last month's *Crossword Puzzler*.

MICROTONES
Page 119
Our version of Brahms's *Cradle Song* will lull your little ones and soothe your senses.

THIS MONTH'S PROGRAM COVERAGE

Computers†	Home Inventory Manager (pg 98)	Turkey's Revenge (pg 110)	Puzzle Clues (pg 118)	Cradle Song (pg 119)
Apple IIgs	Oct '87	★	★	★
Apple II series	Oct '87	★	★	★
Atari 800/XL/XE	★ D p	★	★	★
Commodore 64/128	★ D p	★	★	★
IBM PC FAMILY				
IBM PC	Oct '87	★	★	★
IBM PC*jr*	Oct '87	★	★	★ T
IBM PS/2 Model 30	Oct '87	★	★	★
IBM PC COMPATIBLES				
Amstrad PC1512DD	Oct '87	★	★	★
Blue Chip	Oct '87	★	★	★
Commodore PC-10	Oct '87	★	★	★
Epson Equity I	Oct '87	★	★	★
Kaypro PC-10	Oct '87	★	★	★
Leading Edge Model D	Oct '87	★	★	★
Panasonic FX-600	Oct '87	★	★	★
Tandy 1000/EX/SX	Oct '87	★	★	★ T
Vendex Turbo 888-XT	Oct '87	★	★	★
Zenith Z148PC	Oct '87	★	★	★
Macintosh	Oct '87		★	★
Tandy Color Computer	Oct '87	★	★	★

KEY: ★ Program in this issue for this computer, D Disk drive required, p Printer optional, T Television or monitor with speaker required, † See below for specific models.

THE SYSTEMS WE TEST ON

Every FAMILY & HOME-OFFICE COMPUTING program is thoroughly tested before publication. The exact systems we use during the testing process are listed here. While you can be sure that a program will work if your system matches ours, a comparable system configuration should also work. For example, even though we don't test on the Franklin Ace, Apple programs should work on this system. Any exception to the following hardware or software configurations will be listed in the chart above. Systems that do not have a specific printer listed were tested with Epson FX-80 printers when a printer option was available.

Apple IIe in 40-column mode w/64K RAM, DOS 3.3, two disk drives, MPC parallel printer interface, monochrome and color monitor. Apple programs should also work on Apple IIc/II Plus. **Apple IIgs** w/1MB RAM, one 3.5-inch and one 5.25-inch disk drive, ProDOS 3.3, and Apple RGB monitor. **Atari 800XL** w/two disk drives, DOS II version 2.05, Atari 850 interface, and color monitor. Atari programs should also work on Atari 800 (w/48K), 1200XL, 65/130XE. Smaller programs should work on Atari 400 & 600XL. **Commodore 128** in C-64 mode with two 1571 disk drives, color monitor, and Micrografix parallel graphics interface. Programs should also work on Commodore 64/64C/128D. **IBM PC** w/640K RAM, Disk BASIC D2.00, IBM Monochrome Display and Printer Adapter, monochrome monitor, IBM Color/Graphics Monitor Adapter, RGB monitor, AST Sixpack Plus, and IBM PC DOS 3.10. **IBM PC*jr*** w/128K RAM, one disk drive, IBM PC DOS 2.10, cartridge BASIC J1.00. **IBM PS/2 Model 30** w/640K RAM, one floppy and one hard-disk drive, RGB monitor, IBM PC DOS 3.30, and IBM PC BASIC A3.30. **Macintosh** w/512K RAM, two disk drives, Microsoft BASIC 2.1, and ImageWriter printer. Macintosh programs should also work on 128K Mac/Mac Plus/SE/II and under Microsoft BASIC 2.0. **Tandy Color Computer 2** w/64K RAM, Disk Extended Color BASIC 1.1, two disk drives, Botek-serial-to-parallel printer interface, color monitor. Programs should also work on Color Computer 1 (w/64K) and 3.

The following PC compatibles have been added to our testing list. IBM PC programs should also work on other PC compatibles with at least 128K.

Amstrad w/640K RAM, two disk drives, MS-DOS 3.20, Locomotive BASIC, RGB monitor. **Blue Chip** w/512K RAM, two disk drives, monochrome monitor, MS-DOS 3.20, GW-BASIC 3.20. **Commodore PC-10** w/640K RAM, two disk drives, monochrome monitor, MS-DOS 3.20, GW-BASIC 3.20. **Epson Equity I** w/256K RAM, two disk drives, monochrome display adapter, monochrome monitor, MS-DOS 3.10, GW-BASIC 3.10. **Kaypro PC 10** w/640K RAM, two disk drives, RGB monitor, MS-DOS 2.11, GW-BASIC 2.02. **Leading Edge Model D** w/640K RAM, two disk drives, monochrome and RGB monitors, MS-DOS 3.10, GW-BASIC 3.11. **Panasonic FX-600** w/640K RAM, two disk drives MS-DOS 3.10, GW-BASIC 3.10, enhanced graphics adapter, RGB monitor. **Tandy 1000** w/256K RAM, two disk drives, MS-DOS 2.11 version 02.11.22, GW-BASIC 2.02 version 01.01.00, RGB monitor. **Tandy 1000 EX** w/256K RAM, two disk drives, MS-DOS 2.11 version 02.11.24, GW-BASIC 2.02 version 01.02.00, RGB monitor. **Tandy 1000 SX** w/384K RAM, two disk drives, MS-DOS 3.20 version 03.20.00, GW-BASIC 3.20 version 03.20.00, RGB monitor. **Vendex Turbo 888-XT** w/640K RAM, two disk drives, MS-DOS 3.20, RGB monitor. **Zenith Z148PC** w/640K RAM, two disk drives, MS-DOS 3.10, GW-BASIC 3.20, RGB monitor.

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A HELP LINE FOR PROGRAM PROBLEMS

Call our Program Status Line any time of the day or night to receive an up-to-date summary of our latest programs, the machines on which they run, and any corrections or enhancements to the programs.

PROGRAMMING P.S.

Corrections to Previous Months' Programs

Crisscross *(August 1987, page 61)*

IBM PC & compatibles: Due to a renumbering error, line 370 is incorrect. The line should read as follows:

```
370 GOSUB 1010:IF FL THEN 520
```

Memory Madness *(September 1987, page 82)*

Commodore 64 & 128 (C-64 mode): Due to a production error, line 230 is incorrect. Please change the line to read as follows:

```
230 IF T<2 OR T>3 THEN DL=50:GOSUB 3000:GOTO 200
```

COVERAGE NEWS

Over the four-year history of our magazine, "The Programmer" has undergone many changes. Our programs have grown longer and more beneficial to our readers. We have added some computers to our coverage and have discontinued others. At this time, to allow for more programs for the growing numbers of IBMs and IBM-compatible computers owned by our readers and to provide an increasing number of longer, more useful programs, we will no longer carry program translations for the Adam and TI-99/4A computers. While FAMILY & HOME-OFFICE COMPUTING will continue to cover the Adam and TI-99/4A in our Machine Specifics department and to run articles that are relevant to and useful for all computer owners, Adam and TI owners may wish to contact one of the users' groups listed below for product information and program listings specific to those computers.

Adam and TI owners with modems can continue to find support in FAMILY & HOME-OFFICE COMPUTING's forum on CompuServe (GO FAMFORUM), the Computer Club Forum (GO CLUB), and the TI Forum (GO TIFORUM).

ADAM USERS' GROUP

Northern Illiana ADAM Users' Group (NIAD)
P.O. Box 1317
Lisle, IL 60532
(312) 961-3529

TI-99/4A USERS' GROUPS

Central Westchester 99'ers
7 Taylor Road
Elmsford, NY 10523
(914) 592-2080

Nutmeg TI-99'ers
10 Jolly Road
Ellington, CT 06029
(203) 875-1647

Houston Users' Group
3223 B Palm Desert
Houston, TX 77459
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Consult *Computer Shopper* for additional users' groups.

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HOME INVENTORY MANAGER

Use Our Program to Keep Track of Your Valuables

BY PASQUALE M. CIRULLO

Our Home Inventory Manager *was presented for the Apple II, IBM PC and compatibles, and Macintosh in the October 1987 issue. This month, the program is translated for the Atari 800/XL/XE and Commodore 64/128 computers.*

What is your grandmother's silver worth? What is the serial number of the color television? When did you buy the computer? When questions like these arise, the typical family has to plow through piles of papers to find the answers—if they can be found at all.

You need to know the value of your belongings in order to purchase the proper amount of insurance and to document your claims in case of fire or loss. The police department requires serial numbers in order to verify whether stolen goods it's recovered are yours. When you need repairs or when you try to claim your computer as a tax deduction, you'll find it helpful to know the purchase date.

Home Inventory Manager will help you keep organized records of all your belongings (up to 250 items in each file with an unlimited number of files) along with their model numbers, serial numbers, values, locations, and other useful information.

USING *HOME INVENTORY MANAGER*

Begin by typing the program into your computer, SAVEing it to disk, and RUNning it. (Due to the length of the program and the importance of the material being saved, we recommend that you test the program fully before using it for your actual belongings.) You'll see a menu with three choices: ‹S›TART A NEW INVENTORY, ‹U›SE AN EXISTING INVENTORY, and ‹E›XIT THE PROGRAM.

If you choose ‹S›TART A NEW INVENTORY, the program will ask you for a name that you want to use for this inventory. The name that you enter must be no longer than eight characters and cannot include spaces or punctuation marks. You can enter a question mark to see a list of your files if you are unsure what name to use. Do not add an extension to the name since the program will automatically add it for you. Once you have entered the inventory name, you'll go directly to a screen where you can enter the descriptions of new items. *(See "Using the Editor" for information on entering your descriptions.)*

‹U›SE AN EXISTING INVENTORY lets you look at an inventory file that you entered previously. The computer will ask you for the name of the file you want to use, load the file from disk, and then display the command screen. Again, if you enter a question mark instead of a file name, the computer will show you a list of all the files on your disk.

‹E›XIT THE PROGRAM will allow you to leave *Home Inventory Manager* and do other things with your computer. You must leave the program through this menu item so as to close all your files and return the computer to normal operation.

THE COMMAND SCREEN

If you choose ‹U›SE AN EXISTING INVENTORY from the initial menu, you will arrive at the command screen. The command screen controls all operations on the current inventory. It displays the current record (the description of one item), the total number of items in the inventory, the total value of all items in the inventory, the name of the inventory file, and all the available commands (described below). To choose a command, press its first letter.

Add

This command allows you to add new items to your inventory list. This command displays the same input screen as ‹S›TART A NEW INVENTORY and works exactly the same way. *(See "Using the Editor" for information on entering new records.)*

Back

The program will display the previous record in your inventory. This command is affected by the Item and Location commands, which are discussed below.

Delete

This command will delete the record of any item that you no longer own. The computer will ask you to confirm that you want to delete that record. If you don't want to delete it, press "N."

Edit

Choose Edit when you want to make corrections to a record. The computer will place the cursor at the beginning of the item line and wait for your changes. *(See "Using the Editor" for information on editing your records.)*

Forward

The program will display the next record in your inventory. This command is affected by the Item and Location commands.

Item

This command will allow you to advance directly to (and browse through) specific records of a particular item. For instance, you can use Item to look at only your televisions or only your rings. If you have a large inventory, this is much quicker than repeatedly pressing "B" or "F" until you reach the desired record. Once Item has been set, Back, Forward, and Print will only display or print the items you have specified. If you want to view other items, choose Item again and press RETURN when asked for the item. →

ILLUSTRATIONS BY JOSH GOSFIELD

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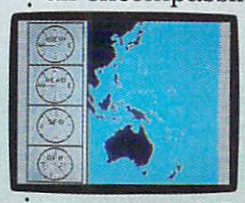

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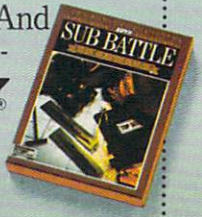

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Location

Location is just like Item except that you will browse through items in a particular location. For instance, it will allow you to see (and print) only the items in the living room or items in your safe-deposit box or will help you find a book that you lent to a friend. Once Item or Location has been set, an asterisk will appear next to the number of items at the top of the screen to remind you.

Print

This command will let you print your inventory on paper. You can choose to print only the currently displayed record or your entire file. If Item or Location has been set, the computer will only print a partial list.

Quit

Quit will automatically save your present inventory to disk and then return to the initial menu.

Save

This command will save the current inventory on your disk and let you continue working with it.

BEAR IN MIND

Problems may arise when saving or loading an inventory file. To minimize the problems, keep your inventory files on a separate disk from your programs and always keep a disk in your disk drive when using the program. Remove the disk only when you have exited the program.

When asked for a file name, don't use more than eight characters and don't use an extension. This is necessary because when the program creates a file for your inventory list, it actually creates two files: a sequential file and a random-access file with the same name but different extensions. These files can be seen when you ask for a catalog of your disk.

Also, the total value shown at the top of the screen is the value of all the items. The program adds the value field, not the price field, for each record. When entering this information do not use a dollar sign as the computer will evaluate it as zero.

AND DON'T FORGET

Be sure to keep a backup copy of your inventory files and store it in a safe place, preferably in a safe-deposit box or somewhere else outside your home. You may want to keep a hard copy of your inventory handy, too.

Always leave the program through the Exit option of the initial menu. Some of your data may be lost if you break out of the program.

USING THE EDITOR

Whenever you choose to ‹START› A NEW INVENTORY or Add or Edit an entry, the program enters Editor mode, and only certain keys will work with the Editor.

The Atari 800/XL/XE uses the BACKSPACE key to delete a character to the left of the cursor, while the Commodore 64 and 128 uses the DEL key.

To move the cursor from one field to another, use the UP-ARROW and DOWN-ARROW keys (not the RETURN key).

If you make an error in typing, you can move back and forth on the line by using the LEFT-ARROW and RIGHT-ARROW keys. You can also switch between Insert mode and Overtype mode by pressing the INSERT key on the Atari 800/XL/XE or the INST key on the Commodore 64 and 128.

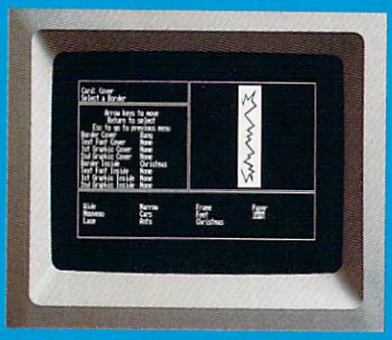
Finally, only use the RETURN key when you are finished entering the record and want to move to the next record. In Edit mode, pressing RETURN will redisplay the command screen.

Atari 800/XL/XE w/DOS 2.0 or 2.5 (printer optional)/*Home Inventory Manager*

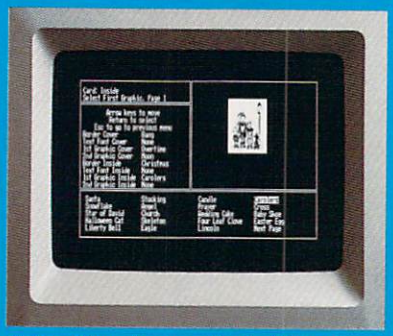
```
10 DIM B(250),CM(7),CO(10),IP(11),L(10),LP(11),RN(250)
20 DIM RO(10),S(250),VA(250),A1$(3),A2$(25),BL$(39)
30 DIM CH$(1),F$(15),FR$(15),FS$(15),IN$(180),IT$(750)
40 DIM K$(1),LB$(106),LI$(5000),MD$(16),SI$(3),SP$(1)
50 DIM SS$(20),T$(40),W$(750),Z$(1)
60 POKE 82,0:POKE 752,1
70 IP(1)=1:FOR X=1 TO 10:READ T:L(X)=T:RO(X)=X+1
80 IP(X+1)=IP(X)+T:NEXT X:SP$=CHR$(32)
90 LP(1)=1:FOR X=1 TO 10:READ T$:T=LEN(T$)
100 T$(T+1)=":":T$(T+2)=SP$:LP(X+1)=LP(X)+LEN(T$)
110 LB$(LP(X))=T$:CO(X)=T+1:NEXT X
120 FOR X=1 TO 7:READ T:CM(X)=T:NEXT X
130 BL$(1)=SP$:BL$(39)=SP$:BL$(2)=BL$:MD$=BL$
140 IT$(1)=SP$:IT$(750)=SP$:IT$(2)=IT$
150 LI$(1)=SP$:LI$(5000)=SP$:LI$(2)=LI$
160 MD$(1)="INSERT":MD$(9)="OVERTYPE"
170 A1$=BL$:A2$=BL$:SL=0:DN=1
180 SI$="":SS$="":TRAP 40000
190 PRINT CHR$(125):POSITION 14,3:PRINT "WELCOME TO"
200 POSITION 8,7:PRINT "HOME INVENTORY MANAGER":PRINT
210 PRINT "DO YOU WANT TO:":PRINT
220 PRINT "<S>TART A NEW INVENTORY,"
230 PRINT "<U>SE AN EXISTING INVENTORY, OR"
240 PRINT "<E>XIT THE PROGRAM?"
250 GOSUB 9000:IF Z$="S" THEN 280
260 IF Z$="U" THEN 420
270 ON Z$="E" GOTO 770:GOTO 250
280 PRINT CHR$(125);"ENTER NAME FOR NEW FILE";
290 POKE 752,0:T$="":INPUT T$
300 POKE 752,1:IF T$="" THEN 190
310 IF T$="?" THEN GOSUB 2000:GOTO 280
320 PRINT CHR$(125);"CREATING FILE, PLEASE STAND BY."
330 IN$(1)=SP$:IN$(180)=SP$:IN$(2)=IN$:F$="D:"
340 F$(3)=T$:FR$=F$:FR$(LEN(FR$)+1)=".RAF"
350 FS$=F$:FS$(LEN(FS$)+1)=".SEQ":TRAP 8500
360 OPEN #3,8,0,FR$:FOR X=1 TO 250
370 NOTE #3,A,E:PRINT #3;IN$:S(X)=A:B(X)=E
380 NEXT X:CLOSE #3:TRAP 40000
390 NR=0:GOSUB 10000:GOSUB 7000:GOSUB 9500
400 IF NR=0 THEN 600
410 DN=1:REC=RN(1):GOSUB 11000:GOTO 590
420 PRINT CHR$(125);"ENTER FILENAME";
430 POKE 752,0:T$="":INPUT T$
440 POKE 752,1:IF T$="" THEN 190
450 IF T$="?" THEN GOSUB 2000:GOTO 420
460 PRINT CHR$(125);"LOADING FILE, PLEASE STAND BY."
470 F$="D:":F$(3)=T$
480 FR$=F$:FR$(LEN(FR$)+1)=".RAF"
490 FS$=F$:FS$(LEN(FS$)+1)=".SEQ":TRAP 8500
500 OPEN #2,4,0,FS$:INPUT #2;NR
510 FOR X=1 TO 3:T=250*X-249
520 INPUT #2;W$:IT$(T,T+249)=W$:NEXT X
530 FOR X=1 TO 20:T=250*X-249
540 INPUT #2;W$:LI$(T,T+249)=W$:NEXT X
550 FOR X=1 TO 250:INPUT #2;A
560 INPUT #2;E:S(X)=A:B(X)=E:NEXT X
570 CLOSE #2:TRAP 40000
580 GOSUB 10000:DN=1:REC=RN(1):GOSUB 11000
590 IF NR<>0 THEN 630
600 CLOSE #3:PRINT CHR$(125):POSITION 0,5
610 PRINT "THERE ARE NO ITEMS IN THIS FILE."
620 GOSUB 6000:GOTO 190
630 V=0:FOR X=1 TO NR:V=V+VA(X):NEXT X:GOSUB 7000
640 GOSUB 7500:POSITION 0,14
650 PRINT "CHOOSE FROM THE FOLLOWING COMMANDS:"
660 PRINT "<A>DD, <B>ACK, <D>ELETE, <E>DIT"
670 PRINT "<F>ORWARD, <I>TEM, <L>OCATION,"
680 PRINT "<P>RINT, <Q>UIT, OR <S>AVE."
690 POSITION 0,20:PRINT BL$:POSITION 0,20
700 PRINT "COMMAND: ";:GOSUB 9000:PRINT Z$
710 IF Z$="Q" THEN GOSUB 5500:CLOSE #3:GOTO 190
720 T$="ABDEFILPS":Z=0:FOR X=1 TO 9
730 IF T$(X,X)=Z$ THEN Z=X:X=9
```

A greeting card in 5 minutes? Easy.

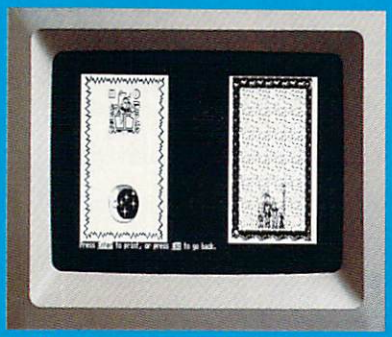
RUNAWAY BESTSELLER!



10:00— *Pick from 11 beautiful borders. Add 20 extra with Fonts & Borders.*



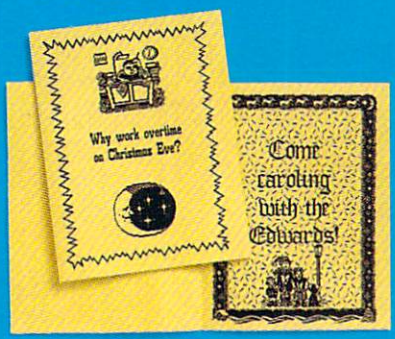
10:01— *Choose from over a hundred high-quality graphics and put two different ones on the same page. Select from hundreds more with Art Galleries.*



10:02— *Preview and make changes anytime without starting over. What a time saver!*

10:03— *Craft your message from 10 expressive typefaces in upper and lower case. Add 20 extra with Fonts & Borders.*

10:04— *And preview again.*



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____ Art Gallery III — 140 fantasy theme graphics NEW!	$29.95	____
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SIGNATURE

NAME (PLEASE PRINT)

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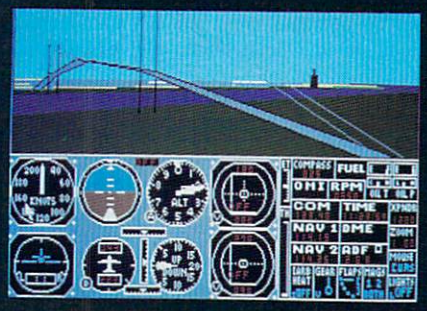
*And compatibles with 256K

```
740 NEXT X:IF Z=0 THEN 690
750 IF Z$="Q" THEN GOSUB 5500:CLOSE #3:GOTO 190
760 ON Z GOSUB 1000,1500,2500,3000,3500,4000,4500,5000
,5500:GOTO 590
770 PRINT CHR$(125):POKE 752,0:CLOSE #3:END
1000 GOSUB 6500:GOSUB 9500:REC=RN(1)
1010 GOSUB 11000:RETURN
1500 D=DN
1510 IF D=1 THEN RETURN
1520 D=D-1:A=D*3-2:E=D*20-19
1530 IF (SL<>0 AND LI$(E,E+19)=SS$) OR IT$(A,A+2)=SI$
OR (SI$="" AND SS$="") THEN DN=D:REC=RN(DN):GOSUB 1100
0:RETURN
1540 GOTO 1510
2000 PRINT CHR$(125):OPEN #4,6,0,"D:*.*"
2010 INPUT #4,T$:PRINT T$:IF T$(2,2)=SP$ THEN 2010
2020 CLOSE #4:GOSUB 6000:RETURN
2500 GOSUB 6500:POSITION 0,19
2510 PRINT "ARE YOU SURE YOU WANT"
2520 PRINT "TO DELETE THIS ENTRY? ";
2530 GOSUB 9000:IF Z$<>"Y" AND Z$<>"N" THEN 2530
2540 PRINT Z$:IF Z$="N" THEN RETURN
2550 Z=RN(DN):IF DN=NR THEN 2590
2560 FOR X=DN TO NR-1:VA(X)=VA(X+1):RN(X)=RN(X+1)
2570 NEXT X:T=Z*3-2:IT$(T)=IT$(T+3,750):IT$(748)=BL$
2580 T=Z*20-19:LI$(T)=LI$(T+20,5000):LI$(4981)=BL$
2590 IF Z$="E" THEN RETURN
2600 IF Z=NR THEN 2640
2610 REC=NR:GOSUB 11000:REC=Z:GOSUB 12500
2620 FOR X=1 TO NR-1:IF RN(X)=NR THEN RN(X)=Z:X=NR-1
2630 NEXT X
2640 NR=NR-1
2650 IF SI$<>"" AND SS$<>"" THEN GOSUB 11500:RETURN
2660 IF DN>NR THEN DN=NR
2670 REC=RN(DN):GOSUB 11000:RETURN
3000 GOSUB 6500:Q=RN(DN):GOSUB 2550:GOSUB 8000
3010 GOSUB 12000:REC=Q:GOSUB 12500:RETURN
3500 D=DN
3510 IF D=NR THEN RETURN
3520 D=D+1:A=D*3-2:E=D*20-19
3530 IF (SL<>0 AND LI$(E,E+19)=SS$) OR IT$(A,A+2)=SI$
OR (SS$="" AND SI$="") THEN DN=D:REC=RN(DN):GOSUB 1100
0:RETURN
3540 GOTO 3510
4000 GOSUB 6500:SI$="":SS$="":POSITION 0,19
4010 PRINT "WHAT ITEM DO YOU WANT TO":T$=""
4020 PRINT "SEARCH FOR";:INPUT T$:IF T$="" THEN RETURN
4030 IF LEN(T$)<3 THEN T$(LEN(T$)+1)=A1$
4040 FOR X=1 TO 3:Z=ASC(T$(X,X))
4050 SI$(X,X)=CHR$(Z-32*(Z>96)*(Z<123)):NEXT X
4060 GOSUB 11500:RETURN
4500 GOSUB 6500:SI$="":SS$="":POSITION 0,19
4510 PRINT "WHAT LOCATION DO YOU":T$=""
4520 PRINT "WANT TO SEE";:INPUT T$
4530 IF T$="" THEN RETURN
4540 FOR X=1 TO LEN(T$):Z=ASC(T$(X,X))
4550 SS$(X,X)=CHR$(Z-32*(Z>96)*(Z<123)):NEXT X
4560 IF LEN(SS$)<20 THEN SS$(LEN(SS$)+1)=BL$
4570 SL=20:GOSUB 11500:RETURN
5000 GOSUB 6500:POSITION 1,16
5010 PRINT "PRESS <1> TO PRINT THIS RECORD OR"
5020 PRINT "PRESS <2> TO PRINT ENTIRE INVENTORY."
5030 GOSUB 9000:IF Z$<>"1" AND Z$<>"2" THEN 5030
5040 CH$=Z$:PRINT
5050 PRINT "PRESS <Y> WHEN THE PRINTER IS READY OR"
5060 PRINT "ANY OTHER KEY TO CANCEL PRINTING.";
5070 GOSUB 9000:PRINT Z$:IF Z$<>"Y" THEN RETURN
5080 IF CH$="1" THEN GOSUB 10500:RETURN
5090 FOR P=1 TO NR:IF SI$="" AND SS$="" THEN 5120
5100 A=P*3-2:E=P*20-19
5110 IF SI$<>IT$(A,A+2) AND SS$<>LI$(E,E+19) THEN 5130
5120 REC=RN(P):GOSUB 11000:GOSUB 10500:LPRINT :LPRINT
5130 NEXT P:LPRINT "TOTAL VALUE: ",V:REC=RN(DN)
5140 GOSUB 11000:RETURN
5500 GOSUB 6500:TRAP 8500
5510 OPEN #2,8,0,FS$:PRINT #2;NR
5520 FOR X=1 TO 3:T=250*X-249
5530 PRINT #2;IT$(T,T+249):NEXT X
5540 FOR X=1 TO 20:T=250*X-249
5550 PRINT #2;LI$(T,T+249):NEXT X
5560 FOR X=1 TO 250:PRINT #2;S(X)
5570 PRINT #2;B(X):NEXT X:CLOSE #2:TRAP 40000:RETURN
6000 PRINT :PRINT "PRESS ANY KEY TO CONTINUE."
6010 GOSUB 9000:RETURN
6500 POSITION 0,14:FOR X=15 TO 21:PRINT BL$
6510 NEXT X:RETURN
7000 PRINT CHR$(125);"ITEMS: ";NR;
7010 IF SI$="" AND SS$="" THEN PRINT :GOTO 7030
7020 PRINT "*"
7030 POSITION 16,0:PRINT "TOTAL VALUE: ";V;
7040 POSITION 0,23:PRINT "INVENTORY: ";F$;:RETURN
7500 FOR X=1 TO 10:POSITION 0,RO(X)
7510 PRINT LB$(LP(X),LP(X+1)-1);
7520 PRINT IN$(IP(X),IP(X+1)-1);"<":NEXT X:RETURN
8000 OPEN #1,4,0,"K:":CY=1:MF=0
8010 T=1+MF*8:POSITION 0,20:PRINT "MODE: ";MD$(T,T+7);
8020 T$=IN$(IP(CY),IP(CY+1)-1):CX=1
8030 POSITION CO(CY)+CX,RO(CY)
8040 PRINT CHR$(ASC(T$(CX,CX))+128)
8050 GET #1,K:DK=0
8060 POSITION CO(CY)+CX,RO(CY):PRINT T$(CX,CX)
8070 FOR L=1 TO 7:IF CM(L)=K THEN DK=L:L=7
8080 NEXT L:IF DK=0 THEN 8220
8090 ON DK GOTO 8100,8100,8130,8130,8150,8170,8210
8110 IF (CX=1 AND DX=-1) OR (CX=L(CY) AND DX=1) THEN 8
030
8120 CX=CX+DX:GOTO 8030
8130 IN$(IP(CY),IP(CY+1)-1)=T$:CY=CY+(DK=4)-(DK=3)
8140 CY=CY+((CY=0)-(CY=11))*10:GOTO 8020
8150 MF= NOT MF:T=1+MF*8
8160 POSITION 6,20:PRINT MD$(T,T+7):GOTO 8030
8170 IF CX=1 THEN 8030
8180 IF CX=2 THEN T$=T$(2,LEN(T$)-1):T$(LEN(T$)+1)=SP$
:GOTO 8200
8190 T$(CX-1)=T$(CX,L(CY))
8200 T$(LEN(T$)+1)=SP$:CX=CX-1:GOTO 8260
8210 IN$(IP(CY),IP(CY+1)-1)=T$:CLOSE #1:RETURN
8220 IF K<32 OR K>126 OR CX>L(CY) THEN 8030
8230 IF CX=L(CY) OR MF THEN T$(CX,CX)=CHR$(K):GOTO 825
0
8240 W$=T$(CX,L(CY)-1):T$(CX+1)=W$:T$(CX,CX)=CHR$(K)
8250 CX=CX+1:CX=CX-(CX=L(CY)+1)
8260 POSITION CO(CY)+1,RO(CY):PRINT T$:GOTO 8030
8500 ER=PEEK(195):EL=256*PEEK(187)+PEEK(186)
8510 TRAP 40000:CLOSE #3:CLOSE #2:PRINT CHR$(125)
8520 POSITION 0,5:PRINT "YOU HAVE ERROR NUMBER ";ER;
8530 PRINT " IN LINE ";EL;"."
8540 IF ERR<>162 THEN PRINT :GOTO 8580
8550 PRINT :PRINT "THE DISK IS FULL.  COPY THIS FILE"
8560 PRINT "TO A NEW DISK IN ORDER TO CONTINUE."
8570 GOSUB 6000:GOTO 190
8580 PRINT "PLEASE CHECK YOUR BASIC MANUAL FOR"
8590 PRINT "A FURTHER EXPLANATION."
8600 GOSUB 6000:GOTO 190
9000 OPEN #1,4,0,"K:":GET #1,K
9010 Z$=CHR$(K-32*(K>96)*(K<123)):CLOSE #1:RETURN
9500 POSITION 0,0:PRINT BL$:POSITION 0,17
9510 PRINT "PRESS <RETURN> ON THE ITEM LINE"
9520 PRINT "AFTER ENTERING THE LAST ITEM."
9530 IN$(1)=SP$:IN$(180)=SP$:IN$(2)=IN$
9540 NR=NR+1:IF NR=INT(NR/20) THEN GOSUB 5500
9550 IF NR<251 THEN 9610
9560 PRINT CHR$(125):NR=250:POSITION 0,5
9570 PRINT "YOU HAVE REACHED THE LIMIT FOR THIS"
9580 PRINT "LIST.  IF YOU HAVE MORE ITEMS TO ADD,"
9590 PRINT "START A NEW LIST."
9600 GOSUB 6000:GOSUB 5500:RETURN
9610 DN=NR:GOSUB 7500:GOSUB 8000
9620 IF IN$(1,30)=BL$(1,30) THEN DN=1:NR=NR-1:RETURN
9630 Q=NR:GOSUB 12000:REC=NR:GOSUB 12500:GOTO 9530
```

Choose Your Adventure!



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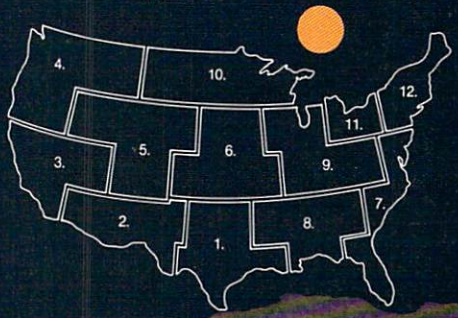

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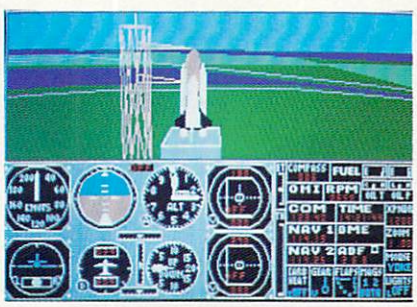

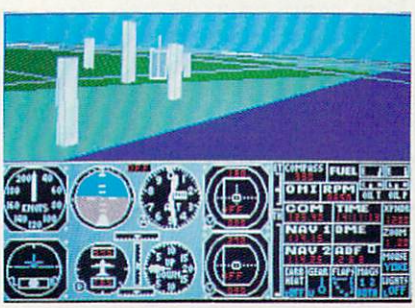

See the World!

CIRCLE READER SERVICE 52

```
10000 TRAP 8500:OPEN #3,12,0,FR$:TRAP 40000:RETURN
10500 FOR Y=1 TO 10:LPRINT LB$(LP(Y),LP(Y+1)-1);IN$(IP
(Y),IP(Y+1)-1):NEXT Y:RETURN
11000 TRAP 8500:POINT #3,S(REC),B(REC)
11010 INPUT #3;IN$:TRAP 40000:RETURN
11500 GOSUB 6500:D=0:FOR X=1 TO NR:A=X*3-2:E=X*20-19
11510 IF SI$=IT$(A,A+2) OR (SL<>0 AND SS$=LI$(E,E+19))
 THEN D=X:X=NR
11520 NEXT X
11530 IF D<>0 THEN DN=D:REC=RN(DN):GOSUB 11000:RETURN
11540 GOSUB 6500:SI$="":SS$="":POSITION 0,15
11550 PRINT "SORRY, CAN'T FIND THAT ITEM OR LOCATION."
11560 GOSUB 6000:RETURN
12000 T$="":FOR X=1 TO 3:Z=ASC(IN$(X,X))
12010 T$(X,X)=CHR$(Z-32*(Z>96)*(Z<123)):NEXT X
12020 W=NR:IF W=1 THEN 12100
12030 FOR X=1 TO NR-1
12040 IF T$<IT$(X*3-2,X*3) THEN W=X:X=NR-1
12050 NEXT X:IF W=NR THEN 12100
12060 FOR X=NR-1 TO W STEP -1:VA(X+1)=VA(X)
12070 RN(X+1)=RN(X):E=X*20-19:W$=LI$(E,E+19)
12080 LI$(E+20,E+39)=W$:NEXT X
12090 A=X*3-2:W$=IT$(W*3-2,75*0):IT$(W*3+1)=W$
12100 IT$(W*3-2,W*3)=T$:TRAP 12120
12110 VA(W)=VAL(IN$(101,110)):TRAP 40000:GOTO 12130
12120 VA(W)=0:TRAP 40000
12130 RN(W)=Q:T$=""
12140 T$="":FOR X=131 TO 150:Z=ASC(IN$(X,X))
12150 T$(LEN(T$)+1)=CHR$(Z-32*(Z>96)*(Z<123)):NEXT X
12160 LI$(W*20-19,W*20)=T$:RETURN
12500 TRAP 8500:POINT #3,S(REC),B(REC)
12510 PRINT #3;IN$:TRAP 40000:RETURN
13000 DATA 30,30,15,15,10,10,10,10,20,30
13500 DATA ITEM,MAKE,MODEL NUMBER,SERIAL NUMBER,PRICE
13510 DATA VALUE,PURCHASE DATE,LENGTH OF WARRANTY
13520 DATA LOCATION,NOTE
14000 DATA 30,31,28,29,157,126,155
```

Commodore 64/128 (C 64 mode) w/disk drive (printer optional)/*Home Inventory Manager*

```
10 DIM CO(10),L(10),RN(250),RO(10),VA(250),CK$(7)
20 DIM IN$(10),IT$(250,2),LB$(10),MD$(1)
30 POKE 649,10:POKE 650,128:POKE 53280,12
40 POKE 53281,12:WH$=CHR$(5):BK$=CHR$(144)
50 FOR X=1 TO 10:RO(X)=X:READ L(X)
60 NEXT X:FOR X=1 TO 10:READ LB$:LB$(X)=LB$+": "
70 CO(X)=LEN(LB$(X)):NEXT X
80 FOR X=1 TO 6:READ T:CK$(X)=CHR$(T):NEXT X
90 SP$=CHR$(32):BL$="":Q$=CHR$(34)
100 FOR X=2 TO 39:BL$=BL$+SP$:NEXT X
110 A1$=LEFT$(BL$,3):A2$=LEFT$(BL$,25)
120 F$="":MD$(0)="INSERT"+SP$+SP$
130 DN=1:MD$(1)="OVERTYPE":SL=0:OPEN 15,8,15
140 SI$="":SS$=""
150 FOR X=1 TO 10:IN$(X)=LEFT$(BL$,L(X)):NEXT X
160 PRINT CHR$(147):POKE 214,2:PRINT
170 PRINT TAB(15);BK$;"WELCOME TO"
180 PRINT:PRINT TAB(9);"HOME INVENTORY MANAGER"
190 PRINT:PRINT "DO YOU WANT TO:":PRINT
200 PRINT "<S>TART A NEW INVENTORY,"
210 PRINT "<U>SE AN EXISTING INVENTORY, OR"
220 PRINT "<E>XIT THE PROGRAM?"
230 GOSUB 9000:Z=0:FOR X=1 TO 3
240 IF MID$("SUE",X,1)=Z$ THEN Z=X:X=3
250 NEXT X:ON Z GOTO 260,350,610:GOTO 230
260 PRINT CHR$(147):F$=""
270 INPUT "NAME FOR NEW FILE";F$
280 IF F$="" THEN 160
290 IF F$="?" THEN GOSUB 2000:GOTO 260
300 PRINT CHR$(147);"CREATING FILE, PLEASE STAND BY."
310 NR=0:GOSUB 10000:REC=250:GOSUB 13500
320 GOSUB 7000:GOSUB 9500
330 IF NR=0 THEN 460
340 DN=1:REC=RN(1):GOSUB 12000:GOTO 450
350 PRINT CHR$(147):F$="":INPUT "FILENAME";F$
360 IF F$="" THEN 160
370 IF F$="?" THEN GOSUB 2000:GOTO 350
380 PRINT CHR$(147);"LOADING FILE, PLEASE STAND BY."
390 CLOSE 3:OPEN 3,8,3,F$+"/SEQ,S,R":CLOSE 3
400 INPUT#15,E,E$:IF E<>0 THEN GOSUB 8500:GOTO 140
410 OPEN 3,8,3,F$+"/SEQ,S,R":INPUT#3,NR:FOR X=1 TO NR
420 INPUT#3,IT$(X,1):INPUT#3,IT$(X,2):INPUT#3,RN(X)
430 INPUT#3,VA(X):NEXT X:CLOSE 3
440 GOSUB 10000:DN=1:REC=RN(1):GOSUB 12000
450 IF NR<>0 THEN 480
460 PRINT CHR$(147);"THERE ARE NO ITEMS IN THIS FILE."
470 CLOSE 3:CLOSE 5:GOSUB 6000:GOTO 140
480 V=0:FOR X=1 TO NR:V=V+VA(X):NEXT X
490 GOSUB 7000:GOSUB 7500:POKE 214,13:PRINT
500 PRINT "CHOOSE FROM THE FOLLOWING COMMANDS:"
510 PRINT "<A>DD, <B>ACK, <D>ELETE, <E>DIT,"
520 PRINT "<F>ORWARD, <I>TEM, <L>OCATION,"
530 PRINT "<P>RINT, <Q>UIT, OR <S>AVE."
540 POKE 214,19:PRINT:PRINT BL$:POKE 214,19:PRINT
550 PRINT "COMMAND: ";:GOSUB 9000:PRINT Z$
560 IF Z$="Q" THEN GOSUB 5500:CLOSE 5:GOTO 140
570 Z=0:FOR X=1 TO 10
580 IF MID$("ABDEFILPS",X,1)=Z$ THEN Z=X:X=10
590 NEXT X:IF Z=0 THEN 540
600 ON Z GOSUB 1000,1500,2500,3000,3500,4000,4500,5000
,5500:GOTO 450
610 CLOSE 15:PRINT CHR$(147):END
1000 GOSUB 6500:GOSUB 9500:REC=RN(1)
1010 GOSUB 12000:RETURN
1500 D=DN
1510 IF D=1 THEN RETURN
1520 D=D-1:SF=0:IF SS$="" AND SI$="" THEN SF=1
1530 IF SL<>0 THEN IF LEFT$(IT$(D,2),SL)=SS$ THEN SF=1
1540 IF IT$(D,1)=SI$ OR SF THEN DN=D:REC=RN(DN):GOSUB
12000:RETURN
1550 GOTO 1510
2000 PRINT CHR$(147):CLOSE 2:OPEN 2,8,0,"$":CLOSE 2
2010 INPUT#15,ER,ER$:IF ER<>0 THEN GOSUB 8500:GOTO 140
2020 OPEN 2,8,0,"$":PRINT "DISK NAME: ";
2030 GET#2,T$:IF T$=CHR$(199) THEN 2070
2040 IF T$=CHR$(34) THEN F=NOT F:ON ABS(F) GOTO 2030:P
RINT:GOTO 2030
2050 IF F THEN PRINT T$;
2060 GOTO 2030
2070 CLOSE 2:GOSUB 6000:RETURN
2500 GOSUB 6500:POKE 214,18:PRINT
2510 PRINT "ARE YOU SURE YOU WANT"
2520 PRINT "TO DELETE THIS ENTRY? ";
2530 GOSUB 9000:IF Z$<>"Y" AND Z$<>"N" THEN 2530
2540 PRINT Z$:IF Z$="N" THEN RETURN
2550 Z=RN(DN):IF DN=NR THEN 2590
2560 FOR X=DN TO NR-1:VA(X)=VA(X+1)
2570 RN(X)=RN(X+1):IT$(X,1)=IT$(X+1,1)
2580 IT$(X,2)=IT$(X+1,2):NEXT X
2590 IF Z$="E" THEN RETURN
2600 IF Z=NR THEN 2650
2610 REC=NR:GOSUB 12000:REC=Z:GOSUB 13500
2620 FOR X=1 TO NR-1
2630 IF RN(X)=NR THEN RN(X)=Z:X=NR-1
2640 NEXT X
2650 NR=NR-1:IF NR=0 THEN RETURN
2660 IF SI$<>"" AND SS$<>"" THEN GOSUB 12500:RETURN
2670 IF DN>NR THEN DN=NR
2680 REC=RN(DN):GOSUB 12000:RETURN
3000 GOSUB 6500:Q=RN(DN):GOSUB 2550:GOSUB 8000
3010 GOSUB 13000:REC=Q:GOSUB 13500:RETURN
3500 D=DN
3510 IF D=NR THEN RETURN
3520 D=D+1:SF=0:IF SS$="" AND SI$="" THEN SF=1
3530 IF SL<>0 THEN IF LEFT$(IT$(D,2),SL)=SS$ THEN SF=1
3540 IF IT$(D,1)=SI$ OR SF THEN DN=D:REC=RN(DN):GOSUB
12000:RETURN
```

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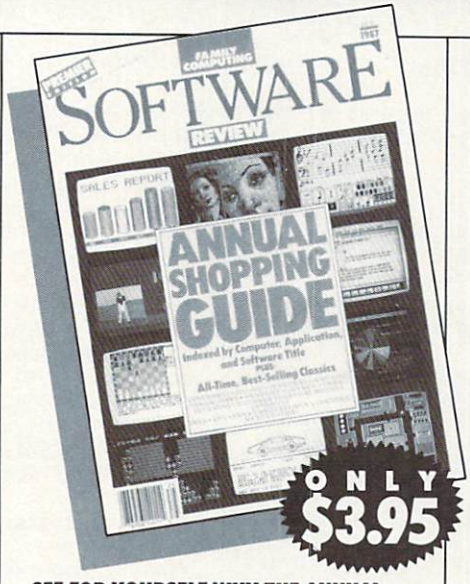

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```
3550 GOTO 3510
4000 GOSUB 6500:SI$="":SS$="":POKE 214,18:PRINT
4010 T$="":PRINT "WHAT ITEM DO YOU WANT TO"
4020 INPUT "SEARCH FOR";T$:IF T$="" THEN RETURN
4030 IF LEN(T$)<3 THEN T$=T$+A1$
4040 FOR X=1 TO 3:Z=ASC( MID$(T$,X,1))
4050 SI$=SI$+CHR$(Z-32*(Z>96)*(Z<123)):NEXT X
4060 GOSUB 12500:RETURN
4500 GOSUB 6500:SI$="":SS$="":POKE 214,18:PRINT
4510 T$="":PRINT "WHAT LOCATION DO YOU"
4520 INPUT "WANT TO SEE";T$:IF T$="" THEN RETURN
4530 FOR X=1 TO LEN(T$):Z=ASC( MID$(T$,X,1))
4540 SS$=SS$+CHR$(Z-32*(Z>96)*(Z<123)):NEXT X
4550 SL=LEN(SS$):GOSUB 12500:RETURN
5000 GOSUB 6500:POKE 214,14:PRINT
5010 PRINT "PRESS <1> TO PRINT THIS RECORD OR"
5020 PRINT "PRESS <2> TO PRINT ENTIRE INVENTORY."
5030 GOSUB 9000:IF Z$<>"1" AND Z$<>"2" THEN 5030
5040 CH$=Z$:PRINT
5050 PRINT "PRESS <Y> WHEN THE PRINTER IS READY OR"
5060 PRINT "ANY OTHER KEY TO CANCEL PRINTING."
5070 GOSUB 9000:IF Z$<>"Y" THEN RETURN
5080 OPEN 4,4:IF CH$="1" THEN GOSUB 11000:GOTO 5160
5090 FOR P=1 TO NR:IF SI$="" AND SS$="" THEN 5130
5100 IF SL=0 THEN 5120
5110 IF SS$=LEFT$(IT$(P,2),SL) THEN 5130
5120 IF SI$<>IT$(P,1) THEN 5140
5130 REC=RN(P):GOSUB 12000:GOSUB 11000:PRINT#4:PRINT#4
5140 NEXT P:PRINT#4,"TOTAL VALUE:",V:PRINT#4
5150 REC=RN(DN):GOSUB 12000
5160 CLOSE 4:RETURN
5500 GOSUB 6500:CLOSE 5
5510 CLOSE 3:OPEN 3,8,3,"@0:"+F$+"/SEQ,S,W":CLOSE 3
5520 INPUT#15,E,E$:IF E<>0 THEN GOSUB 8500:GOTO 140
5530 OPEN 3,8,3,"@0:"+F$+"/SEQ,S,W":PRINT#3,NR
5540 FOR X=1 TO NR:PRINT#3,IT$(X,1):PRINT#3,IT$(X,2)
5550 PRINT#3,RN(X):PRINT#3,VA(X):NEXT X
5560 IF FL OR NR=250 THEN 5590
5570 FOR X=NR+1 TO NR+20:PRINT#3,A1$:PRINT#3,A2$
5580 PRINT#3,0:PRINT#3,0:NEXT X
5590 CLOSE 3:GOSUB 10000:RETURN
6000 PRINT:PRINT TAB(7);"PRESS ANY KEY TO CONTINUE."
6010 GOSUB 9000:RETURN
6500 POKE 214,13:PRINT:FOR X=15 TO 21:PRINT BL$
6510 NEXT X:RETURN
7000 PRINT CHR$(147);"ITEMS:";NR;
7010 IF SI$<>"" OR SS$<>"" THEN PRINT "*";
7020 PRINT TAB(15);"TOTAL VALUE:";V
7030 POKE 214,21:PRINT:PRINT "INVENTORY: ";F$:RETURN
7500 PRINT CHR$(19):PRINT:FOR X=1 TO 10
7510 PRINT WH$;LB$(X);BK$;IN$(X);"<":NEXT X:RETURN
8000 CY=1:MF=0
8010 POKE 214,19:PRINT:PRINT "MODE: ";MD$(MF)
8020 T$=IN$(CY):CX=1
8030 POKE 214,RO(CY):PRINT
8040 PRINT TAB(CO(CY)+CX-1);WH$;CHR$(18);SP$;CHR$(146)
;BK$
8050 POKE 214,RO(CY):PRINT
8060 PRINT TAB(CO(CY)+CX-1);MID$(T$,CX,1)
8070 GET K$:IF K$="" THEN 8030
8080 DK=0:FOR L=1 TO 6
8090 IF K$=CK$(L) THEN DK=L:L=6
8100 NEXT L:IF DK=0 THEN 8220
8110 ON DK GOTO 8120,8120,8140,8140,8160,8200
8120 DX=(DK=1)-(DK=2):IF(CX=1 AND DX=-1) OR (CX=L(CY)
AND DX=1) THEN 8030
8130 CX=CX+DX:GOTO 8030
8140 IN$(CY)=T$:CY=CY+(DK=3)-(DK=4)
8150 CY=CY+((CY=11)-(CY=0))*10:GOTO 8020
8160 IF CX=1 THEN 8030
8170 IF CX=2 THEN T$=MID$(T$,CX)+SP$:GOTO 8190
8180 T$=LEFT$(T$,CX-2)+MID$(T$,CX)+SP$
8190 CX=CX-1:GOTO 8300
8200 MF=NOT MF:POKE 214,19:PRINT
8210 PRINT TAB(6);MD$(ABS(MF)):GOTO 8030
8220 IF K$=CHR$(13) THEN IN$(CY)=T$:RETURN
8230 IF K$<SP$ OR CX>L(CY) THEN 8030
8240 IF NOT MF THEN 8270
8250 IF CX=1 THEN T$=K$+MID$(T$,2):GOTO 8290
8260 T$=LEFT$(T$,CX-1)+K$+MID$(T$,CX+1):GOTO 8290
8270 IF CX=1 THEN T$=K$+LEFT$(T$,L(CY)-1):GOTO 8290
8280 T$=LEFT$(T$,CX-1)+K$+MID$(T$,CX,L(CY)-CX)
8290 CX=CX+1:CX=CX+(CX=L(CY)+1)
8300 POKE 214,RO(CY):PRINT
8310 PRINT TAB(CO(CY));T$;"<":GOTO 8030
8500 CLOSE 5:PRINT CHR$(147)
8510 PRINT "THE COMPUTER HAS ENCOUNTERED AN ERROR."
8520 PRINT:PRINT "ERROR NUMBER: ";E
8530 PRINT "EXPLANATION: ";E$:PRINT
8540 PRINT "PLEASE CHECK YOUR BASIC MANUAL FOR"
8550 PRINT "A FURTHER EXPLANATION.":GOSUB 6000:RETURN
9000 GET Z$:IF Z$="" THEN 9000
9010 Z=ASC(Z$):Z$=CHR$(Z-32*(Z>96)*(Z<123)):RETURN
9500 PRINT CHR$(19);BL$:POKE 214,16:PRINT
9510 PRINT "PRESS <RETURN> ON THE ITEM LINE"
9520 PRINT "AFTER ENTERING THE LAST ITEM."
9530 FOR X=1 TO 10:IN$(X)=LEFT$(BL$,L(X)):NEXT X
9540 NR=NR+1:IF NR=INT(NR/20) THEN GOSUB 5500
9550 IF NR<251 THEN 9610
9560 PRINT CHR$(147):NR=250
9570 PRINT "YOU HAVE REACHED THE LIMIT FOR THIS"
9580 PRINT "LIST.IF YOU HAVE MORE ITEMS TO ADD,"
9590 PRINT "START A NEW LIST."
9600 GOSUB 6000:GOSUB 5500:RETURN
9610 DN=NR:GOSUB 7500:GOSUB 8000
9620 IF IN$(1)=LEFT$(BL$,30) THEN DN=1:NR=NR-1:RETURN
9630 Q=NR:GOSUB 13000:REC=NR:GOSUB 13500:GOTO 9530
10000 CLOSE 5:OPEN 5,8,5,F$+"/RAF,L,"+CHR$(216):RETURN
10500 PRINT#15,"P";CHR$(5);CHR$(REC);CHR$(0);CHR$(1)
10510 RETURN
11000 FOR Y=1 TO 10:PRINT#4,LB$(Y);IN$(Y)
11010 NEXT Y:RETURN
12000 GOSUB 10500:GOSUB 10500
12010 FOR X=1 TO 10:INPUT#5,IN$(X):NEXT X
12020 INPUT#15,E,E$:IF E<>0 THEN GOSUB 8500:GOTO 140
12030 RETURN
12500 GOSUB 6500:D=0:FOR X=1 TO NR
12510 SF=0:IF SL<>0 THEN IF SS$=LEFT$(IT$(X,2),SL) THE
N SF=1
12520 IF SI$=IT$(X,1) OR SF THEN D=X:X=NR
12530 NEXT X
12540 IF D<>0 THEN DN=D:REC=RN(DN):GOSUB 12000:RETURN
12550 SI$="":SS$="":POKE 214,14:PRINT
12560 PRINT "SORRY, CAN'T FIND THAT ITEM OR LOCATION."
12570 GOSUB 6000:RETURN
13000 T$="":FOR X=1 TO 3:Z=ASC( MID$(IN$(1),X,1))
13010 T$=T$+CHR$(Z-32*(Z>96)*(Z<123)):NEXT X
13020 W=NR:IF W=1 THEN 13080
13030 FOR X=1 TO NR-1:IF T$<IT$(X,1) THEN W=X:X=NR-1
13040 NEXT X:IF W=NR THEN 13080
13050 FOR X=NR-1 TO W STEP -1:VA(X+1)=VA(X)
13060 IT$(X+1,1)=IT$(X,1):IT$(X+1,2)=IT$(X,2)
13070 RN(X+1)=RN(X):NEXT X
13080 IT$(W,1)=T$:VA(W)=VAL(IN$(6)):RN(W)=Q
13090 T$="":FOR X=1 TO LEN(IN$(9))
13100 Z=ASC(MID$(IN$(9),X,1))
13110 T$=T$+CHR$(Z-32*(Z>96)*(Z<123)):NEXT X
13120 IT$(W,2)=T$:DN=W:RETURN
13500 GOSUB 10500:GOSUB 10500:T2=TI+30
13510 IF TI<T2 THEN 13510
13520 RF$="":FOR X=1 TO 10
13530 RF$=RF$+Q$+IN$(X)+Q$+CHR$(13):NEXT X
13540 PRINT#5,RF$
13550 INPUT#15,E,E$:IF ER<>0 THEN GOSUB 8500:GOTO 140
13560 RETURN
14000 DATA 30,30,15,15,10,10,10,10,25,30
14500 DATA ITEM,MAKE,MODEL NUMBER,SERIAL NUMBER,PRICE
14510 DATA VALUE,PURCHASE DATE,LENGTH OF WARRANTY
14520 DATA LOCATION,NOTE
15000 DATA 157,29,145,17,20,148
```

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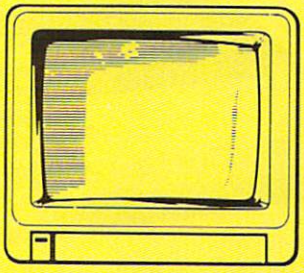

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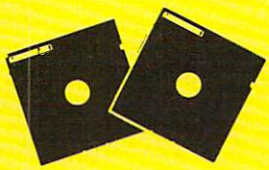

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TURKEY'S REVENGE

BY JEFF DONAHUE

Farmer Freddy Fleetfoot woke up late on Thanksgiving morning to a tremendous crashing noise in the barnyard. With only minutes to spare before he had to fetch his prize turkey and deliver it to the town market, Farmer Fleetfoot discovered that his fat fowl had not only flown the coop, but had punched a bunch of holes in it, as well!

Apparently, the turkey had eaten all the grain in the coop and grown to monstrous proportions. What will Freddy do? Or, more to the point, what will you do? As Freddy, you must stop that bird from gulping down the rest of your grain and get the tremendous turkey to the market on time.

Freddy (represented by a "Y" on the screen) begins the game just outside the farmhouse. The turkey (represented by a "Q") starts out beside the coop. If the turkey can't eat some grain, it will grow tired from hunger and let you capture it. But, things aren't all that simple. Scattered around the barnyard are your last eight sacks of grain (depicted as asterisks). Should the turkey manage to eat four of these, it will get even bigger and who knows what will happen? (Hint: There's a gate in the fence at the bottom of the screen.) Also scattered around your farm are eight haystacks (an "A" represents each haystack) which you cannot go through, but which the turkey will throw to the four winds when he hits one.

Your only chance is to collect as much grain as possible, as quickly as possible. To move around the farm at the beginner or expert level, press the following keys: "I" (up), "J" (left), "K" (down), and "L" (right). Good luck, farmer! And beware of the terrible turkey. If you two collide while it's still going strong, the big bird will knock the stuffing out of you!

JEFF DONAHUE *is the technical associate at* FAMILY & HOME-OFFICE COMPUTING.

Apple II series/*Turkey's Revenge*

```
10 DIM EG(8),SK(8,2)
20 HS = 0:FOR X = 768 TO 796:READ Y:POKE X,Y:NEXT X
30 B$ = "!":FM$ = "Y":S$ = CHR$(32):TK$ = "Q"
40 C$ = "=":FOR X = 2 TO 40:C$ = C$+"=":NEXT X
50 F1 = 0:F2 = 0:F3 = 0:F4 = 0:FX = 8:FY = 15:GN = 0
60 ND = 0:SC = 0:TM = 60:TX = 35:TY = 7
70 FOR X = 1 TO 8:EG(X) = 0:NEXT X
80 TEXT:HOME:PRINT "TURKEY:";TAB(31);"FARMER:"
90 HTAB 16:PRINT "TIMER:"
100 FOR Y = 3 TO 20:VTAB Y:PRINT B$;TAB(40);B$:NEXT Y
110 VTAB 3:PRINT C$:VTAB 20:PRINT C$;
120 VTAB 20:HTAB 11:PRINT "--":INVERSE
130 FOR Y = 4 TO 6:VTAB Y:HTAB 34:PRINT SPC(6):NEXT Y
140 FOR Y = 16 TO 19:VTAB Y:HTAB 2:PRINT SPC(7):NEXT Y
150 NORMAL:VTAB 22:HTAB 9:PRINT "<B>EGINNER OR <E>XPER
T? ";
160 GET P$:K = ASC(P$):P$ = CHR$(K-(K > 96)*32)
170 IF P$ <> "B" AND P$ <> "E" THEN 160
180 GOSUB 1000:HTAB 12:PRINT "<I> UP    <J> LEFT"
190 VTAB 23:HTAB 12:PRINT "<K> DOWN  <L> RIGHT";
200 FOR X = 1 TO 2:X$ = "A":IF X = 2 THEN X$ = "*"
210 FOR Y = 1 TO 8
220 A = INT(RND(1)*38+2):B = INT(RND(1)*16+4)
230 SR = SCRN(A-1,2*(B-1))+16*SCRN(A-1,2*(B-1)+1)-128
240 IF SR <> 32 OR B = 7 OR B = 15 THEN 220
250 IF X = 2 THEN SK(Y,1) = A:SK(Y,2) = B
260 VTAB B:HTAB A:PRINT X$:NEXT Y,X
270 VTAB FY:HTAB FX:PRINT FM$
280 VTAB TY:HTAB TX:PRINT TK$
290 INVERSE:VTAB 5:HTAB 35:PRINT "COOP"
300 VTAB 17:HTAB 3:PRINT "FARM-"
310 HTAB 3:PRINT "HOUSE":NORMAL
320 VTAB 1:HTAB 9:PRINT GN;:HTAB 39:PRINT SC
330 VTAB 2:HTAB 23:PRINT TM;S$
340 IF TM > 0 OR F3 OR F4 THEN 370
350 GOSUB 1000:F3 = 1
360 PRINT TAB(8);"OH NO! YOUR TIME RAN OUT!"
370 IF GN < 40 OR F4 THEN 410
380 GOSUB 1000:F4 = 1
390 PRINT TAB(7);"THE TURKEY GROWS EVEN LARGER"
400 PRINT TAB(10);"AND NOW IT'S AFTER YOU!"
410 IF GN+SC = 80 AND SC > 40 THEN ND = 2:GOTO 810
420 K = PEEK(-16384)-128:IF K < 1 THEN 580
430 POKE -16368,0:K = K-(K > 96)*32
440 IF K < 73 OR K > 76 THEN 580
450 NX = FX-(K = 74)+(K = 76)
460 NY = FY-(K = 73)+(K = 75)
470 SR = SCRN(NX-1,2*(NY-1))+16*SCRN(NX-1,2*(NY-1)+1)-
128
480 IF F4 AND SR = 45 THEN VTAB FY:HTAB FX:PRINT S$:VT
AB NY:HTAB NX:PRINT FM$:ND = 3:GOTO 810
490 IF NX < 2 OR NX > 39 OR NY < 4 OR NY > 19 OR SR =
-96 OR SR = 65 THEN 420
500 IF SR <> 42 THEN 550
510 F2 = 0:SC = SC+10
520 FOR X = 1 TO 8:POKE 8,200:POKE 6,3:CALL 768
530 IF NX = SK(X,1) AND NY = SK(X,2) THEN EG(X) = 1:X
= 8
540 NEXT X
550 VTAB FY:HTAB FX:PRINT S$:FX = NX:FY = NY
560 VTAB FY:HTAB FX:PRINT FM$
570 IF SR = 81 THEN HTAB FX:VTAB FY:PRINT "@":ND = 1:G
OTO 810
580 IF F1 AND P$ = "B" THEN 800
590 IF NOT F4 THEN 620
600 XN = TX+SGN(FX-TX):YN = TY+SGN(FY-TY)
610 GOSUB 1020:GOTO 710
620 IF F2 THEN 680
630 F2 = 1:D2 = 10000:C = 0
640 FOR X = 1 TO 8:IF EG(X) THEN 670
650 DX = SK(X,1)-TX:DY = SK(X,2)-TY
660 D = DX*DX+DY*DY:IF D < D2 THEN D2 = D:C = X:SX = S
GN(DX):SY = SGN(DY)
670 NEXT X:IF C = 0 THEN 800
680 XN = TX+SX*(TX <> SK(C,1))
690 YN = TY+SY*(TY <> SK(C,2)):GOSUB 1020
700 IF XN = SK(C,1) AND YN = SK(C,2) THEN F2 = 0:EG(C)
 = 1:GN = GN+10
710 SR = SCRN(XN-1,2*(YN-1))+16*SCRN(XN-1,2*(YN-1)+1)-
128
720 IF SR <> 42 THEN 760
```

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(Advanced version of the Timex 1000)

42-key mechanical keyboard (not membrane). Contains 2K RAM. Reverse video, Z80A, 6.5MHz processor, ROM 8K BASIC. Graphics capability/sound–music, TV or monitor. Joystick input operates on 115 VAC. Includes: AC adapter, TV cable, & pair of cassette cables. Will run all prerecorded tapes for Sinclair/Timex 1000-ZX85. Mfr – Power 3000. (In orig. boxes.)

Item #10336 **$29.95** New

Accessories . . .

★ **16K RAMPACK upgrade**
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★ **32K RAMPACK upgrade**
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15", green phosphor, high res. (12 lines center) & bandwidth from 10Hz to 30Hz ± 3dB. Operating volt.: 120/240VAC, 50/60Hz., 65VA max. Mfr – Motorola – Alpha Series

Item #10044 **$34.95** New

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Insides of the COMMODORE Computer

Commodore VIC 20 CPU board & mechanical keyboard. For parts only – guaranteed not to work!

Item #12144 **$14.95** RFE

COMMODORE Cartridges

C-64
12 asst. cartridges – ***Number Nabber, Star Post, Financial Advisor, Radar Rat, Jupiter Land, Magic Compos, Viduzzles, Golf, Easy Calc, Simon Basic, Dragon's Den,*** & ***ABC Voice.*** Item #13573
Set of 12 – $49.95 New

C16 & +4
9 asst. cartridges – ***Script+2, Calc Plus, Script+, Jack Attack, Pirate Adventures, Atomic Miss, Strange Odyssey, Financial Advisor,*** & ***Logo.*** Item #13572
Set of 12 – $29.95 New

ADAM Computer . . .

(Less printer)
No wiring nec. (just plugs together). Hook-up diag. incl. Includes: keyboard, 1 cassette digital data drive, 2 game controllers, power supply & one cassette. Cap. of running CP/M, w/built-in word processor.
Item #7410
***Complete* – $99.00**

ADAM Printer . . .

Complete, less top cover plate. Friction feed. Takes standard paper 8½" x 11". (Customer returns; tested – operational.)
Item #8839 **$69.50**

ADAM Accessories

Data Drive–
Item #6641 **$19.95**

Printer Power Supply–
Item #6642 **$14.95**

ASCII Keyboard–
Item #6643 **$19.95**

Controllers – Set of 4
Item #7013 **$9.95**

Cassettes–
(Incl. *Smart Basic, Buck Rogers* & blank cassette.) Item #7786
***BAKER'S DOZEN* – $19.95**

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Item #13305 **$3.95**

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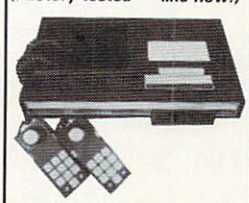
ADAM 5¼" DISK DRIVE

Gives your Adam fast, reliable data storage and retrieval. Can hold up to 160K bytes of information. Uses industry-standard SS/DD disks. Connects directly to your Adam memory console. Comes with disk drive power supply, Disk Manager disk and owner's manual.
Mfr – Coleco, model 7817
Item #12830
***Like New* – $199.00**

ColecoVision Game
(Factory tested – like new!)



Also includes power supply, instruction manual, modulator, and one Donkey Kong cartridge.
Item #7411 **$29.95**

ColecoVision Accessories . . .

***ColecoVision* to *Adam* Expansion Kit**
Just plugs into your *ColecoVision.*
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Incl. *Turbo* cart.
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Mfr – Seagate/Tandon
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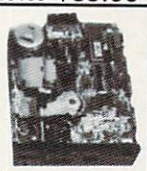
5¼" 1/2 HT. DISK DRIVES
48/96 TPI 1.2 Mb. (AT Compat.)

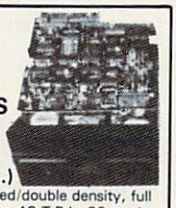


DS/single-double density; 80 track.
Mfr – Panasonic #JU-475
Item #10005 **$119.00** New
96 TPI, DS/Quad Density (DOS 3.2 Compatible)
Tandon TM55–4; DS/Quad
Item #1904 **$79.00**
2 for **$150.00**

5" COMPOSITE VIDEO MONITOR

Power regulated, 12VDC. Mtd. in plastic cabinet, w/brightness control knob. Mfr – Sperry
OA Dim.: 8"W x 8"H x 8¾"deep
Item #14536 **$24.95**

5¼" FULL HT. DISK DRIVES
48 TPI (IBM® Compat.)



Double sided/double density, full height drive. 48 T.P.I., 80 tracks.
Mfr – Tandon TM100-2
Item #7928 **$79.00**
2 for **$150.00**
96 TPI, DS/Quad Density
Mfr – CDC #9409T
Item #1893 **$99.00**

EXTERNAL DISK DRIVE CHASSIS

With 60W power supply (fan cooled). Can accommodate:
2 full ht. drives – our item #7928
2 floppy drives – #1904
1 hard drive & 1 floppy – #13250
Input: 115/230V, 50/60 Hz.
Originally for Burroughs computer.
Dim.: 11"W x 8"H x 12" deep
Item #14541 **$59.50**

115 CFM MUFFIN® TYPE FANS

115VAC/60Hz.; 21W.; 28A.; 3100 RPM; 5-blade model; aluminum housing. Can be mtd. for blowing or exhaust.
NEW – Item #1864 **$12.95**
USED – Howard Ind. 3-15-3455
Item #5345 **$5.95**

HIGH-RESOLUTION TTL MONITORS

12VDC. Mtd. in metal housing. Schematic supplied.

12", Green Phosphor
Item #6811 **$19.95** New

9", Amber
Item #14332 **$14.95** New

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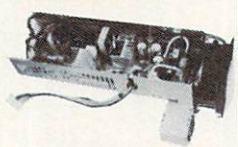

DC Output: +5V @ 8 amps.
+12V @ 1 amp.
–5V @ 250 ma.
Input: 110VAC/60 Hz., ±20%
Dim.: 12"L x 3¾"H x 5¾"D
Encl. in alum. housing. Fan cooled.
Mfr – Shindenger Electric #130569SXD
Item #14707 **$19.95** New

COMPUTER GRADE POWER SUPPLY

Other uses–runs CB & car radios. Comes ready to plug in!
DC Output: –5V @ .5 amp.
+5V @ 3 amp.
+12V @ 6 amp.
Input 115V/60Hz. Dim.: 9¼"W x 3¾"H. (Rubber ft. incl.)
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Dimen.: 11⅞"L x 4⅜"H x 5⅝"W
Mtd on metal base w/rubber ft.
Mfr – Sola #63-13-114
Item #9999 **$99.00** New

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```
730 POKE 8,140:POKE 6,12:CALL 768:FOR X = 1 TO 4
740 POKE 8,140:POKE 6,2:CALL 768:POKE 8,75
750 POKE 6,5:CALL 768:FOR Y = 1 TO 10:NEXT Y,X
760 VTAB TY:HTAB TX:PRINT S$:TX = XN:TY = YN
770 VTAB TY:HTAB TX:PRINT TK$
780 CL = PEEK(-16336)+PEEK(-16336)
790 IF SR = 89 THEN VTAB TY:HTAB TX:PRINT "@":ND = 1:G
OTO 810
800 TM = TM-(TM > 0):F1 = NOT F1:GOTO 320
810 GOSUB 1000:IF SC > 0 AND SC > HS THEN HS = SC
820 ON ND GOTO 830,860,870
830 FLASH:HTAB 8:PRINT "SPLAT!";:POKE 8,155:POKE 6,18
840 CALL 768:NORMAL:PRINT " THE TURKEY GOT YOU!"
850 POKE 8,205:CALL 768:POKE 8,255:CALL 768:GOTO 890
860 PRINT TAB(5);"CONGRATULATIONS! THE TURKEY GETS":PR
INT TAB(5);"TIRED AND YOU EASILY CAPTURE IT.":GOTO 890
870 POKE 8,255:POKE 6,18:CALL 768
880 PRINT TAB(4);"WHEW! YOU BARELY MANAGED TO ESCAPE!"
890 POKE -16384,0:VTAB 24:HTAB 8
900 PRINT "PRESS ANY KEY TO CONTINUE.";
910 GET X$:IF ASC(X$) <> 32 THEN 910
920 HOME:PRINT "HIGH SCORE: ";HS;SPC(12);"YOUR SCORE:
";SC:PRINT
930 IF ND = 2 AND TM > 0 THEN PRINT TAB(7);"YOU MADE I
T TO THE MARKET!":PRINT
940 IF HS = SC AND SC > 0 THEN HTAB 8:FLASH:PRINT "YOU
 GOT THE HIGH SCORE!":NORMAL:PRINT
950 PRINT TAB(8);"PRESS <P> TO PLAY AGAIN"
960 PRINT TAB(11);"OR <Q> TO QUIT ...";
970 GET X$:IF X$ = "P" OR X$ = CHR$(112) THEN 50
980 IF X$ <> "Q" AND X$ <> CHR$(113) THEN 970
990 HOME:END
1000 VTAB 22:HTAB 1:PRINT SPC(40):PRINT SPC(40)
1010 VTAB 22:RETURN
1020 YN = YN-(TY = 15)*(YN = 16)*(TX < 8)
1030 XN = XN+(TX = 9)*(XN = 8)*(YN > 15)
1040 YN = YN+(TY = 7)*(YN = 6)*(TX > 34)
1050 XN = XN-(TX = 33)*(XN = 34)*(YN < 7)
1060 RETURN
1070 DATA 165,8,74,133,10,164,8,173,48,192,136
1080 DATA 234,234,208,251,165,7,56,229,10,133
1090 DATA 7,176,237,198,6,208,233,96
```

Atari 800/XL/XE/*Turkey's Revenge*

```
10 DIM EG(8),SK(8,2),B$(40),K$(1),P$(1)
20 DIM RS$(7),S$(1),T$(10),TAB$(38),X$(2)
30 GRAPHICS 0:POKE 82,0:POKE 752,1:HS=0:S$=CHR$(32)
40 TAB$(1)=S$:TAB$(38)=S$:TAB$(2)=TAB$
50 B$(1)="=":B$(40)="=":B$(2)=B$
60 RS$=CHR$(160):RS$(7)=CHR$(160):RS$(2)=RS$
70 F1=0:F2=0:F3=0:F4=0:FX=7:FY=14:GN=0
80 ND=0:SC=0:TM=80:TX=34:TY=6
90 FOR X=1 TO 8:EG(X)=0:NEXT X
100 PRINT CHR$(125);"TURKEY:";TAB$(1,22);"FARMER:"
110 PRINT TAB$(1,15);"TIMER:":PRINT B$;
120 FOR X=3 TO 18
130 POSITION 0,X:PRINT CHR$(124);TAB$;CHR$(124)
140 NEXT X:POSITION 0,19:PRINT B$;
150 POSITION 10,19:PRINT "--"
160 FOR Y=3 TO 5:POSITION 33,Y:PRINT RS$(1,6)
170 NEXT Y:FOR Y=15 TO 18
180 POSITION 1,Y:PRINT RS$:NEXT Y
190 POSITION 8,21:PRINT "<B>EGINNER OR <E>XPERT? ";
200 GOSUB 1000:P$=K$:IF P$<>"B" AND K$<>"E" THEN 200
210 GOSUB 2000:PRINT TAB$(1,10);"<I> UP    <J> LEFT"
220 PRINT TAB$(1,10);"<K> DOWN  <L> RIGHT"
230 X$="A*":FOR X=1 TO 2
240 FOR Y=1 TO 8
250 A=INT(RND(0)*38)+1:B=INT(RND(0)*16)+3
260 LOCATE A,B,SR:IF SR<>32 OR B=6 OR B=14 THEN 250
270 IF X=2 THEN SK(Y,1)=A:SK(Y,2)=B
280 POSITION A,B:PRINT X$(X,X):NEXT Y:NEXT X
290 POSITION 34,4:PRINT "COOP"
300 POSITION 2,16:PRINT "FARM-"
310 POSITION 2,17:PRINT "HOUSE"
320 POSITION FX,FY:PRINT "Y":POSITION TX,TY:PRINT "Q"
330 POSITION 8,0:PRINT GN:POSITION 37,0:PRINT SC
340 POSITION 22,1:PRINT TM;S$
350 IF TM>0 OR F3 OR F4 THEN 380
360 GOSUB 2000:F3=1
370 PRINT TAB$(1,7);"OH NO, YOUR TIME RAN OUT!"
380 IF GN<40 OR F4 THEN 430
390 GOSUB 2000:F4=1:SOUND 0,140,10,15
400 FOR D=1 TO 15:NEXT D:SOUND 0,0,0,0
410 PRINT TAB$(1,6);"THE TURKEY GROWS EVEN LARGER"
420 PRINT TAB$(1,9);"AND NOW IT'S AFTER YOU!"
430 IF GN+SC=80 AND SC>40 THEN ND=2:GOTO 800
440 K=PEEK(764):IF K=255 THEN 580
450 POKE 764,255:DX=(K=0)-(K=1):DY=(K=5)-(K=13)
460 IF DX+DY=0 THEN 580
470 NX=FX+DX:NY=FY+DY:LOCATE NX,NY,SR
480 IF SR=45 AND F4 THEN POSITION FX,FY:PRINT S$:POSIT
ION NX,NY:PRINT "Y":ND=3:GOTO 800
490 POSITION NX,NY:PRINT CHR$(SR)
500 IF NX<1 OR NX>38 OR NY<3 OR NY>18 OR SR=160 OR SR=
65 THEN 440
510 IF SR<>42 THEN 550
520 F2=0:SC=SC+10:FOR X=1 TO 8
530 IF NX=SK(X,1) AND NY=SK(X,2) THEN EG(X)=1:X=8
540 NEXT X
550 POSITION FX,FY:PRINT S$:FX=NX:FY=NY
560 POSITION FX,FY:PRINT "Y":IF SR<>81 THEN 580
570 POSITION FX,FY:PRINT "@":ND=1:GOTO 800
580 IF F1 AND P$="B" THEN 790
590 IF  NOT F4 THEN 620
600 XN=TX+SGN(FX-TX)
610 YN=TY+SGN(FY-TY):GOSUB 3000:GOTO 690
620 IF F2 THEN 670
630 F2=1:D2=10000:C=0:FOR X=1 TO 8:IF EG(X) THEN 660
640 DX=SK(X,1)-TX:DY=SK(X,2)-TY:D=DX*DX+DY*DY
650 IF D<D2 THEN D2=D:C=X:SX=SGN(DX):SY=SGN(DY)
660 NEXT X:IF C=0 THEN 790
670 XN=TX+SX*(TX<>SK(C,1)):YN=TY+SY*(TY<>SK(C,2))
680 GOSUB 3000:IF XN=SK(C,1) AND YN=SK(C,2) THEN F2=0:
EG(C)=1:GN=GN+10
690 POSITION TX,TY:PRINT S$:LOCATE XN,YN,SR:TX=XN
700 TY=YN:POSITION TX,TY:PRINT "Q":IF SR<>42 THEN 770
710 SOUND 0,100+RND(0)*20,10,10:SOUND 1,110,10,8
720 FOR D=1 TO 8:NEXT D:FOR S=1 TO 2
730 SOUND 0,140,10,10:SOUND 1,136,10,8
740 FOR D=1 TO 10:NEXT D:SOUND 0,130,10,10
750 SOUND 1,124,10,8:FOR D=1 TO 10:NEXT D
760 SOUND 0,0,0,0:SOUND 1,0,0,0:NEXT S
770 SOUND 0,20,10,8:SOUND 0,0,0,0
780 IF SR=89 THEN POSITION TX,TY:PRINT "@":ND=1:GOTO 8
00
790 TM=TM-(TM>0):F1= NOT F1:GOTO 330
800 IF SC>0 AND SC>HS THEN HS=SC
810 GOSUB 2000:ON ND GOTO 820,850,870
820 PRINT TAB$(1,8);"SPLAT! THE TURKEY GOT YOU!"
830 FOR S=1 TO 10:SOUND 0,50+RND(0)*75,10,10
840 FOR D=1 TO 5:NEXT D:NEXT S:SOUND 0,0,0,0:GOTO 900
850 PRINT " CONGRATULATIONS! THE TURKEY GETS TIRED"
860 PRINT TAB$(1,7);"AND YOU EASILY CAPTURE IT.":GOTO
900
870 FOR S=1 TO 3:SOUND 0,150,10,8:FOR D=1 TO 10:NEXT D
880 SOUND 0,80,10,10:NEXT S:SOUND 0,0,0,0
890 PRINT TAB$(1,2);"WHEW! YOU BARELY MANAGED TO ESCAP
E!"
900 POSITION 5,23:PRINT "PRESS <SPACE BAR> TO CONTINUE
.";
910 GOSUB 1000:IF K$<>S$ THEN 910
920 PRINT CHR$(125);"HIGH SCORE: ";HS;TAB$(1,10);"YOUR
 SCORE: ";SC:PRINT
930 IF ND=2 AND TM>0 THEN PRINT TAB$(1,6);"YOU MADE IT
 TO THE MARKET!":PRINT
```

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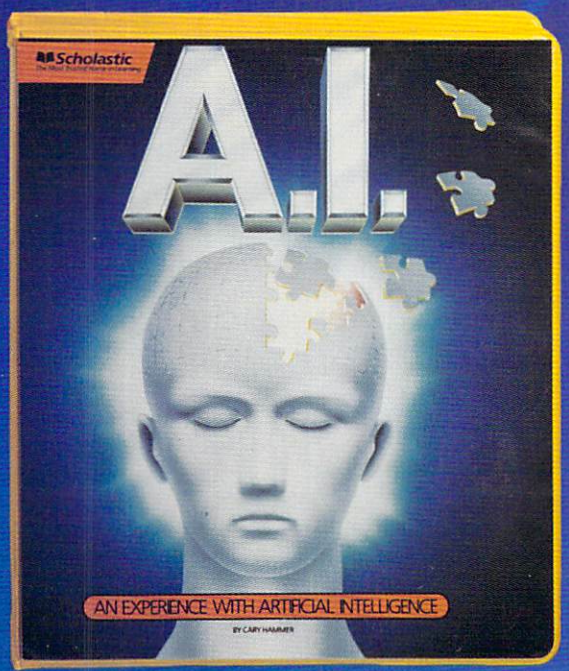

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```
940 IF HS=SC AND SC>0 THEN PRINT TAB$(1,7);"YOU GOT TH
E HIGH SCORE!":PRINT
950 PRINT TAB$(1,7);"PRESS <P> TO PLAY AGAIN"
960 PRINT TAB$(1,10);"OR <Q> TO QUIT ...";
970 GOSUB 1000:IF K$<>"P" AND K$<>"Q" THEN 970
980 IF K$="P" THEN 70
990 POKE 752,0:PRINT CHR$(125):END
1000 OPEN #1,4,0,"K:":GET #1,K
1010 K$=CHR$(K-(K>96)*(K<123)*32):CLOSE #1:RETURN
2000 POSITION 0,21:PRINT TAB$:PRINT TAB$
2010 POSITION 0,21:RETURN
3000 YN=YN-(TY=14)*(YN=15)*(TX<7)
3010 XN=XN+(TX=8)*(XN=7)*(YN>14)
3020 YN=YN+(TY=6)*(YN=5)*(TX>33)
3030 XN=XN-(TX=32)*(XN=33)*(YN<6):RETURN
```

Commodore 64 & 128 (C 64 mode)/ *Turkey's Revenge*

```
10 DIM EG(8),SK(8,2):HS=0:CC=55296
20 POKE 646,1:POKE 649,1:POKE 650,128:POKE 53280,6
30 FM=25:S$=CHR$(32):TK=17
40 BL$="":FOR X=2 TO 39:BL$=BL$+S$:NEXT X
50 SI=54272:FOR L=0 TO 23:POKE SI+L,0:NEXT L
60 POKE SI+5,36:POKE SI+6,128:POKE SI+12,36
70 POKE SI+13,68:POKE SI+24,15
80 F1=0:F2=0:F3=0:F4=0:FX=7:FY=14:GN=0
90 ND=0:SC=0:TM=60:TX=34:TY=6
100 FOR X=1 TO 8:EG(X)=0:NEXT X
110 PRINT CHR$(147);"TURKEY:";TAB(29);"FARMER:"
120 PRINT TAB(15);"TIMER:":FOR X=2 TO 19
130 POKE 40*X+1024,33:POKE 40*X+1063,33:NEXT X
140 FOR X=0 TO 39:POKE 1104+X,61:POKE 1784+X,61:NEXT X
150 POKE 1794,45:POKE 1795,45
160 FOR X=3 TO 5:FOR Y=33 TO 38
170 POKE 40*X+Y+1024,224:POKE 40*X+Y+CC,13:NEXT Y,X
180 FOR X=15 TO 18:FOR Y=1 TO 7
190 POKE 40*X+Y+1024,224:POKE 40*X+Y+CC,10:NEXT Y,X
200 POKE 214,20:PRINT
210 PRINT TAB(8);"<B>WGINNER OR <E>XPERT?";
220 GET P$:IF P$<>"B" AND P$<>"E" THEN 220
230 GOSUB 2000:PRINT TAB(11);"<I> UP    <J> LEFT"
240 PRINT TAB(11);"<K> DOWN  <L> RIGHT";
250 FOR X=1 TO 2:X1=1:X2=15:IF X=2 THEN X1=42:X2=3
260 FOR Y=1 TO 8
270 A=INT(RND(1)*37+2):B=INT(RND(1)*15+4)
280 SR=PEEK(40*B+A+1024)
290 IF SR<>32 OR B=6 OR B=14 THEN 270
300 IF X=2 THEN SK(Y,1)=A:SK(Y,2)=B
310 POKE 40*B+A+1024,X1:POKE 40*B+A+CC,X2:NEXT Y,X
320 POKE 40*FY+FX+1024,FM:POKE 40*TY+TX+1024,TK
330 POKE 214,3:PRINT:PRINT TAB(34);"COOP"
340 POKE 214,15:PRINT:PRINT TAB(2);"FARM-"
350 PRINT TAB(2);"HOUSE"
360 PRINT CHR$(19);TAB(7);GN;TAB(36);STR$(SC)
370 PRINT TAB(22);STR$(TM);S$
380 IF TM>0 OR F3 OR F4 THEN 410
390 GOSUB 2000:F3=-1
400 PRINT TAB(7);"OH NO! YOUR TIME RAN OUT!"
410 IF GN<40 OR F4 THEN 450
420 GOSUB 2000:F4=-1
430 PRINT TAB(6);"THE TURKEY GROWS EVEN LARGER"
440 PRINT TAB(9);"AND NOW IT'S AFTER YOU!"
450 IF GN+SC=80 AND SC>40 THEN ND=2:GOTO 920
460 GET K$:IF K$="" THEN 620
470 K=ASC(K$):IF K<73 OR K>76 THEN 620
480 NX=FX+(K=74)-(K=76):NY=FY+(K=73)-(K=75)
490 SR=PEEK(40*NY+NX+1024)
500 IF NOT F4 OR SR<>45 THEN 530
510 POKE 40*FY+FX+1024,32
520 POKE 40*NY+NX+1024,FM:ND=3:GOTO 920
530 IF NX<1 OR NX>38 OR NY<3 OR NY>18 OR SR=224 OR SR=
1 THEN 460
540 IF SR<>42 THEN 590
550 F2=0:SC=SC+10
560 FOR X=1 TO 8:POKE SI+11,17
570 IF NX=SK(X,1) AND NY=SK(X,2) THEN EG(X)=-1:X=8
580 POKE SI+11,16:NEXT X
590 POKE 40*FY+FX+1024,32:FX=NX:FY=NY
600 POKE 40*FY+FX+1024,FM:POKE 40*FY+FX+CC,1
610 IF SR=17 THEN POKE 40*FY+FX+1024,0:POKE 40*FY+FX+C
C,2:ND=1:GOTO 920
620 IF F1 AND P$="B" THEN 910
630 IF NOT F4 THEN 660
640 XN=TX+SGN(FX-TX):YN=TY+SGN(FY-TY)
650 GOSUB 3000:GOTO 750
660 IF F2 THEN 720
670 F2=-1:D2=10000:C=0
680 FOR X=1 TO 8:IF EG(X) THEN 710
690 DX=SK(X,1)-TX:DY=SK(X,2)-TY:D=DX*DX+DY*DY
700 IF D<D2 THEN D2=D:C=X:SX=SGN(DX):SY=SGN(DY)
710 NEXT X:IF C=0 THEN 910
720 XN=TX-SX*(TX<>SK(C,1))
730 YN=TY-SY*(TY<>SK(C,2)):GOSUB 3000
740 IF XN=SK(C,1) AND YN=SK(C,2) THEN F2=0:EG(C)=-1:GN
=GN+10
750 SR=PEEK(40*YN+XN+1024)
760 IF SR<>42 THEN 860
770 POKE SI+4,33:POKE SI+11,33:POKE SI,144
780 POKE SI+1,16:POKE SI+7,134:POKE SI+8,16
790 FOR D=1 TO 20:NEXT D
800 POKE SI+4,32:POKE SI+11,32:POKE SI+4,33
810 POKE SI+11,33:POKE SI,194:POKE SI+1,14
820 POKE SI+7,180:POKE SI+8,14
830 FOR D=1 TO RND(1)*30:NEXT D
840 POKE SI,184:POKE SI+1,17:POKE SI+7,170
850 POKE SI+8,17:POKE SI+4,32:POKE SI+11,32
860 POKE 40*TY+TX+1024,32:TX=XN:TY=YN
870 POKE 40*TY+TX+1024,17:POKE 40*TY+TX+CC,1
880 POKE SI+4,17:POKE SI+1,22+6*F1
890 POKE SI,96-99*F1:POKE SI+4,16
900 IF SR=25 THEN POKE 40*TY+TX+1024,0:POKE 40*TY+TX+C
C,2:ND=1:GOTO 920
910 TM=TM+(TM>0):F1=NOT F1:GOTO 360
920 GOSUB 2000:IF SC>0 AND SC>HS THEN HS=SC
930 ON ND GOTO 940,970,1010
940 PRINT CHR$(28);TAB(7);"SPLAT!";CHR$(5);" THE TURKE
Y GOT YOU!"
950 POKE SI,48:POKE SI+1,4:POKE SI+4,129:FOR D=1 TO 80
960 NEXT D:POKE SI+4,128:GOTO 1020
970 PRINT TAB(4);"CONGRATULATIONS! THE TURKEY GETS"
980 PRINT TAB(4);"TIRED AND YOU EASILY CAPTURE IT."
990 POKE SI+4,33:POKE SI,44
1000 FOR D=1 TO 190:NEXT D:POKE SI+4,32:GOTO 1020
1010 PRINT TAB(3);"WHEW! YOU BARELY MANAGED TO ESCAPE!
"
1020 POKE 214,22:PRINT
1030 PRINT TAB(7);"PRESS ANY KEY TO CONTINUE.";
1040 GET X$:IF X$<>S$ THEN 1040
1050 PRINT CHR$(147);"HIGH SCORE:";HS;SPC(11);"YOUR SC
ORE:";SC:PRINT
1060 IF ND=2 AND TM>0 THEN PRINT TAB(8);"YOU MADE IT T
O THE MARKET!":PRINT
1070 IF HS=SC AND SC>0 THEN PRINT TAB(9);"YOU GOT THE
HIGH SCORE!":PRINT
1080 PRINT TAB(9);"PRESS <P> TO PLAY AGAIN"
1090 PRINT TAB(12);"OR <Q> TO QUIT ...";
1100 GET X$:IF X$="P" THEN 80
1110 IF X$<>"Q" THEN 1100
1120 PRINT CHR$(147);:END
2000 POKE 214,20:PRINT:PRINT BL$:PRINT BL$
2010 POKE 214,20:PRINT:RETURN
3000 YN=YN+(TY=14)*(YN=15)*(TX<7)
3010 XN=XN-(TX=8)*(XN=7)*(YN>14)
3020 YN=YN-(TY=6)*(YN=5)*(TX>33)
3030 XN=XN+(TX=32)*(XN=33)*(YN<6)
3040 RETURN
```

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THANKSGIVING PROGRAM

IBM PC & compatibles/*Turkey's Revenge*

```
10 DEF SEG=&H40:V=PEEK(&H10) AND 48
20 IF V=32 THEN WIDTH 40
30 DEF SEG=0:DIM EG(8),SK(8,2):RANDOMIZE TIMER
40 KEY OFF:SCREEN 0,0:COLOR 7,0,0
50 FM$="Y":S$=CHR$(32):TK$="Q":HS=0
60 F1=0:F2=0:F3=0:F4=0:FX=8:FY=15:GN=0
70 ND=0:SC=0:TM=100:TX=35:TY=7
80 FOR X=1 TO 8:EG(X)=0:NEXT X
90 CLS:PRINT "TURKEY:";SPC(23);"FARMER:"
100 PRINT TAB(16);"TIMER:":COLOR 15
110 T$=STRING$(38,215):PRINT CHR$(218);T$;CHR$(191);
120 FOR X=4 TO 19
130 LOCATE X,1:PRINT CHR$(216);SPC(38);CHR$(216)
140 NEXT X:LOCATE 20,1:PRINT CHR$(192);T$;CHR$(217)
150 LOCATE 20,11:PRINT STRING$(2,196):COLOR 2
160 FOR Y=4 TO 6:LOCATE Y,34:PRINT STRING$(6,219)
170 NEXT Y:COLOR 4:FOR Y=16 TO 19
180 LOCATE Y,2:PRINT STRING$(7,219):NEXT Y:COLOR 7
190 LOCATE 22,9:PRINT "<B>eginner or <E>xpert? ";
200 GOSUB 1000:P$=K$:IF P$<>"B" AND K$<>"E" THEN 200
210 GOSUB 2000:LOCATE 22,12:PRINT "<I> UP     <J> LEFT"
220 PRINT TAB(12);"<K> DOWN  <L> RIGHT"
230 FOR X=1 TO 2:IF X=1 THEN X$="A" ELSE X$="*"
240 FOR Y=1 TO 8
250 A=INT(RND*38)+2:B=INT(RND*16)+4:SR=SCREEN(B,A)
260 IF SR<>32 OR B=7 OR B=15 THEN 250
270 IF X=2 THEN SK(Y,1)=A:SK(Y,2)=B
280 COLOR 14+(X=2)*8:LOCATE B,A:PRINT X$:NEXT Y,X
290 COLOR 14,2:LOCATE 5,35:PRINT "COOP"
300 COLOR 15,4:LOCATE 17,3:PRINT "FARM-"
310 LOCATE 18,3:PRINT "HOUSE":COLOR 7,0
320 LOCATE FY,FX:PRINT FM$:LOCATE TY,TX:PRINT TK$
330 LOCATE 1,8:PRINT GN:LOCATE 1,38:PRINT STR$(SC)
340 LOCATE 2,22:PRINT TM
350 IF TM>0 OR F3 OR F4 THEN 380
360 GOSUB 2000:F3=-1
370 PRINT TAB(8);"Oh no, your time ran out!"
380 IF GN<40 OR F4 THEN 420
390 GOSUB 2000:F4=-1:SOUND 800,4
400 PRINT TAB(7);"The turkey grows even larger"
410 PRINT TAB(10);"and now it's after you!"
420 IF GN+SC=80 AND SC>40 THEN ND=2:GOTO 760
430 K$=INKEY$:IF K$="" THEN 580
440 POKE 1050,PEEK(1052):K=ASC(K$)
450 K$=CHR$(K-(K>96)*(K<123)*32)
460 DK=INSTR("JLIK",K$):IF DK=0 THEN 580
470 NX=FX+(DK=1)-(DK=2):NY=FY+(DK=3)-(DK=4)
480 SR=SCREEN(NY,NX)
490 IF SR=196 AND F4 THEN LOCATE FY,FX:PRINT S$:LOCATE
 NY,NX:PRINT FM$:ND=3:GOTO 760
500 IF NX<2 OR NX>39 OR NY<4 OR NY>19 OR SR=219 OR SR=
65 THEN 430
510 IF SR<>42 THEN 550
520 F2=0:SC=SC+10:FOR X=1 TO 8
530 IF NX=SK(X,1) AND NY=SK(X,2) THEN EG(X)=-1:X=8
540 NEXT X
550 LOCATE FY,FX:PRINT S$:FX=NX:FY=NY
560 LOCATE FY,FX:PRINT FM$
570 IF SR=81 THEN COLOR 20:LOCATE FY,FX:PRINT "@":COLO
R 7:ND=1:GOTO 760
580 IF F1 AND P$="B" THEN 750
590 IF NOT F4 THEN 620
600 XN=TX+SGN(FX-TX)
610 YN=TY+SGN(FY-TY):GOSUB 3000:GOTO 690
620 IF F2 THEN 670
630 F2=-1:D2=10000:C=0:FOR X=1 TO 8:IF EG(X) THEN 660
640 DX=SK(X,1)-TX:DY=SK(X,2)-TY:D=DX*DX+DY*DY
650 IF D<D2 THEN D2=D:C=X:SX=SGN(DX):SY=SGN(DY)
660 NEXT X:IF C=0 THEN 750
670 XN=TX-SX*(TX<>SK(C,1)):YN=TY-SY*(TY<>SK(C,2))
680 GOSUB 3000:IF XN=SK(C,1) AND YN=SK(C,2) THEN F2=0:
EG(C)=-1:GN=GN+10
690 SR=SCREEN(YN,XN):LOCATE TY,TX:PRINT S$
700 TX=XN:TY=YN:IF SR<>42 THEN 730
710 SOUND 150,2:FOR S=1 TO 5:SOUND 75,.5
720 SOUND 37,.2:NEXT S
730 LOCATE TY,TX:PRINT TK$:SOUND 50,.2
740 IF SR=89 THEN COLOR 20:LOCATE TY,TX:PRINT "@":COLO
R 7:ND=1:GOTO 760
750 TM=TM+(TM>0):F1=NOT F1:GOTO 330
760 IF SC>0 AND SC>HS THEN HS=SC
770 GOSUB 2000:ON ND GOTO 780,810,830
780 COLOR 20:PRINT TAB(8);"SPLAT!";:COLOR 7
790 PRINT " The turkey got you!":FOR S=1 TO 75
800 SOUND 99+RND*99,.3:NEXT S:SOUND 500,1:GOTO 860
810 PRINT " Congratulations! The turkey gets tired"
820 PRINT TAB(8);"and you easily capture it.":GOTO 860
830 FOR S=1 TO 3:SOUND 99,3
840 SOUND 37,1:SOUND 150,2:NEXT S
850 PRINT TAB(3);"Whew! You barely managed to escape!"
860 LOCATE 24,6:PRINT "Press <SPACE BAR> to continue."
;
870 POKE 1050,PEEK(1052)
880 IF INKEY$<>S$ THEN 880
890 CLS:PRINT "HIGH SCORE:";HS;SPC(10);"YOUR SCORE:";S
C:PRINT
900 IF ND=2 AND TM>0 THEN PRINT TAB(7);"You made it to
 the market!":PRINT
910 IF HS=SC AND SC>0 THEN COLOR 15:PRINT TAB(8);"YOU
GOT THE HIGH SCORE!":COLOR 7:PRINT
920 PRINT TAB(8);"Press <P> to play again"
930 PRINT TAB(11);"or <Q> to quit ...";
940 GOSUB 1000:IF K$<>"P" AND K$<>"Q" THEN 940
950 IF K$="P" THEN 60
960 IF V=32 THEN WIDTH 80
970 CLS:DEF SEG:KEY ON:END
1000 K$=INKEY$:IF K$="" THEN 1000 ELSE K=ASC(K$)
1010 K$=CHR$(K-(K>96)*(K<123)*32):RETURN
2000 LOCATE 22,1:PRINT SPACE$(39):PRINT SPACE$(39)
2010 LOCATE 22,1:RETURN
3000 YN=YN+(TY=15)*(YN=16)*(TX<8)
3010 XN=XN-(TX=9)*(XN=8)*(YN>15)
3020 YN=YN-(TY=7)*(YN=6)*(TX>34)
3030 XN=XN+(TX=33)*(XN=34)*(YN<7):RETURN
```

Tandy Color Computer/*Turkey's Revenge*

```
10 CLEAR 1000:DIM EG(8),SK(8,2):SCREEN 0,0
20 FM$="Y":S$=CHR$(32):TK$="Q":HS=0
30 F1=0:F2=0:F3=0:F4=0:FX=6:FY=7:GN=0
40 ND=0:SC=0:TM=60:TX=27:TY=6
50 FOR X=1 TO 8:EG(X)=0:NEXT X
60 CLS:PRINT "TURKEY:";STRING$(15,32);"FARMER:"
70 PRINT TAB(10);"TIMER:"
80 T$=STRING$(32,61):PRINT@64,T$
90 FOR X=96 TO 352 STEP 32
100 PRINT@X,CHR$(33);TAB(31);CHR$(33)
110 NEXT X:PRINT@384,T$:PRINT@394,"--";
120 FOR Y=121 TO 185 STEP 32
130 PRINT@Y,STRING$(6,207);:NEXT Y
140 FOR Y=257 TO 353 STEP 32
150 PRINT@Y,STRING$(7,191);:NEXT Y
160 PRINT@422,"<I> UP     <J> LEFT"
170 PRINT@454,"<K> DOWN  <L> RIGHT"
180 FOR X=1 TO 2:IF X=1 THEN X$="A" ELSE X$="*"
190 FOR Y=1 TO 8
200 A=RND(30)+1:B=RND(9)+3:SR=PEEK(B*32+A+1024)
210 IF SR<>96 OR B=7 OR B=6 THEN 200
220 IF X=2 THEN SK(Y,1)=A:SK(Y,2)=B
230 PRINT@B*32+A,X$;:NEXT Y,X
240 PRINT@154,"COOP";:PRINT@290,"FARM-";
250 PRINT@322,"HOUSE";;
260 PRINT@230,FM$;:PRINT@219,TK$;
270 PRINT@7,GN;:PRINT@29,SC;:PRINT@48,TM;
280 IF TM>0 OR F3 OR F4 THEN 310
```

→

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```
290 GOSUB 2000:F3=-1
300 PRINT TAB(8);"OH NO, YOUR TIME RAN OUT!"
310 IF GN<40 OR F4 THEN 350
320 GOSUB 2000:F4=-1:SOUND 200,4
330 PRINT@418,"THE TURKEY GROWS EVEN LARGER"
340 PRINT@452,"AND NOW IT'S AFTER YOU!";
350 IF GN+SC=80 AND SC>40 THEN ND=2:GOTO 690
360 FOR L=1 TO 11:K$=INKEY$:IF K$<>"" THEN L=11
370 NEXT L:IF K$="" THEN 510
380 K=ASC(K$):K=K-(K>96)*(K<123)*32
390 IF K<73 OR K>76 THEN 510
400 NX=FX+(K=74)-(K=76):NY=FY+(K=73)-(K=75)
410 SR=PEEK(32*NY+NX+1024)
420 IF SR=109 AND F4 THEN PRINT@32*FY+FX,S$;:PRINT@32*
NY+NX,FM$;:ND=3:GOTO 690
430 IF NX<2 OR NX>31 OR NY<3 OR NY>11 OR SR=207 OR SR=
191 OR SR=65 THEN 360
440 IF SR<>106 THEN 480
450 F2=0:SC=SC+10:FOR X=1 TO 8
460 IF NX=SK(X,1) AND NY=SK(X,2) THEN EG(X)=-1:X=8
470 NEXT X
480 PRINT@32*FY+FX,S$;:FX=NX:FY=NY
490 PRINT@32*FY+FX,FM$;
500 IF SR=81 THEN PRINT@32*FY+FX,"@";:ND=1:GOTO 690
510 IF F1 THEN 680
520 IF NOT F4 THEN 550
530 XN=TX+SGN(FX-TX)
540 YN=TY+SGN(FY-TY):GOSUB 3000:GOTO 620
550 IF F2 THEN 600
560 F2=-1:D2=10000:C=0:FOR X=1 TO 8:IF EG(X) THEN 590
570 DX=SK(X,1)-TX:DY=SK(X,2)-TY:D=DX*DX+DY*DY
580 IF D<D2 THEN D2=D:C=X:SX=SGN(DX):SY=SGN(DY)
590 NEXT X:IF C=0 THEN 680
600 XN=TX-SX*(TX<>SK(C,1)):YN=TY-SY*(TY<>SK(C,2))
610 GOSUB 3000:IF XN=SK(C,1) AND YN=SK(C,2) THEN F2=0:
EG(C)=-1:GN=GN+10
620 SR=PEEK(32*YN+XN+1024):PRINT@32*TY+TX,S$;
630 TX=XN:TY=YN:IF SR<>106 THEN 660
640 SOUND 150,2:FOR S=1 TO 3:SOUND 75,1
650 SOUND 37,1:NEXT S
660 PRINT@32*TY+TX,TK$;:SOUND 50,1
670 IF SR=89 THEN PRINT@32*TY+TX,"@";:ND=1:GOTO 690
680 TM=TM+(TM>0):F1=NOT F1:GOTO 270
690 IF SC>0 AND SC>HS THEN HS=SC
700 GOSUB 2000:ON ND GOTO 710,740,770
710 PRINT@419,"SPLAT! THE TURKEY GOT YOU!"
720 FOR S=1 TO 35:SOUND 99+RND(99),1
730 NEXT S:SOUND 255,1:GOTO 810
740 PRINT@416,"CONGRATULATIONS! THE TURKEY GETS"
750 PRINT@448,"TIRED AND YOU EASILY CAPTURE IT.";
760 GOTO 810
770 FOR S=1 TO 3:SOUND 99,3
780 SOUND 37,1:SOUND 150,2:NEXT S
790 PRINT@430,"WHEW!"
800 PRINT@450,"YOU BARELY MANAGE TO ESCAPE!";
810 PRINT@481,"PRESS <SPACE BAR> TO CONTINUE.";
820 IF INKEY$<>S$ THEN 820
830 CLS:PRINT"HIGH SCORE:";HS
840 PRINT@18,"YOUR SCORE:";SC
850 IF ND=2 AND TM>0 THEN PRINT TAB(3);"YOU MADE IT TO
 THE MARKET!":PRINT
860 IF HS=SC AND SC>0 THEN PRINT TAB(5);"YOU GOT THE H
IGH SCORE!":PRINT
870 PRINT TAB(5);"PRESS <P> TO PLAY AGAIN"
880 PRINT TAB(8);"OR <Q> TO QUIT ...";
890 GOSUB 1000:IF K$<>"P" AND K$<>"Q" THEN 890
900 IF K$="P" THEN 30
910 END
1000 K$=INKEY$:IF K$="" THEN 1000 ELSE K=ASC(K$)
1010 K$=CHR$(K-(K>96)*(K<123)*32):RETURN
2000 PRINT@416,STRING$(32,32);
2010 PRINT@448,STRING$(32,32);:RETURN
3000 YN=YN+(TY=7)*(YN=8)*(TX<8)
3010 XN=XN-(TX=8)*(XN=7)*(YN>7)
3020 YN=YN-(TY=6)*(YN=5)*(TX>24)
3030 XN=XN+(TX=24)*(XN=25)*(YN<6):RETURN
```


CROSSWORD PUZZLER

BY STEVE C.M. CHEN AND KAREN KANE

This is the fifth in a series of crossword puzzles. This month, clues and data for a Thanksgiving puzzle are presented along with the solution to last month's puzzle (page 120). The solution to the Thanksgiving Crossword Puzzler *will appear in next month's issue along with data for a new puzzle.*

In order to solve or print out the puzzle, you must have the master puzzle program. The Commodore 64/128, IBM PC and compatibles, and Tandy Color Computer versions of the program were presented in the July issue, and the Adam, Apple, Atari, and Macintosh versions appeared in August. Back issues of the July and August issues are available for $4.25 from Crossword Puzzler, *c/o* FAMILY & HOME-OFFICE COMPUTING, *730 Broadway, New York, NY 10003. Please indicate your specific brand and model of computer.*

THANKSGIVING PUZZLE DATA

```
A HAOA,FBGB,HBNB,ACKC,1110
B LCNC,EDJD,BEIE,CFEF,1120
C JFKF,MFDG,OGFH,GHIH,1155
D JHAI,LICJ,EJFJ,KJMJ,1161
E GKNK,FLKL,BMDM,EMOM,1186
F BNHN,INJN,AOHO,ZZZZ,6252
```

THANKSGIVING PUZZLE CLUES

Across

1A Disciple
1I Country that England and France declared war upon in November 1914
2A Fattened rooster
2I Pertaining to eye or vision
3B Excess food
4A French for 'death'
4F Bundle of hay
4K Open; yawning
5C One of a group of genes that occurs alternately at a given point
5J Larry Bird is a ———
6A Integrated circuit (abbr.)
6F Faction
6N French masculine for 'the'
7A Shock with electricity
7E Where Lincoln gave his address in November 1863
8A Access
8K Muffler
9B Horn of plenty
9M Draw (noun)
10A Symbol for tellurium
10G Oklahoma town
10N Former name of phone company: ——— Bell
11A Most ancient
11H Anagram of 'hardly'
12A Large inside muscles of the loins
12G Beelzebub
12L Border
13F Ship that first brought pilgrims to Plymouth Rock
14C Dough
14K Cambria
15B Prairie
15I Pack animals, e.g. mules

Down

1A Form of electric current
1B ——— Alto, California
1C Carmen or La Traviata
1D Lightly
1E Dynamite
1I Ripped
1J United Parcel Service (abbr.)
1K Right (abbr.)
1L Internal power, as in the martial arts
1M French for explosion
2O Portion
3F Overweight
3G Servant
3H Important political event in November (2 words)
4A Indian corn
4K Account executive (abbr.)
4L ———oma: a disease of the eye
4N Traveler
6B Negates
6I Suffix meaning quality of, condition of
7C Instructions at the bottom right of a page (abbr.)
7E Women's ward of a hospital
7K Boy Scouts of America (abbr.)
7M Rodent
8D Flow; discharge
8O Banquet
9G Civil Engineer (abbr.)
9I A rice dish
9J Romantic interlude
10A November birthstone
10L Indian tribe
11C Have reservations about
11E Steamship (abbr.)
11M Anagram of Albee
12G Implored
12N Chemist who discovered deuterium
13F Item showing locations
13K Possess
14D Royal Exchange (abbr.)
14E Extended play record (abbr.)
14O Social Studies (abbr.)

—JESSICA HARVEY

CRADLE SONG

BY JOEY LATIMER

"Cradle Song," by Johannes Brahms, has been lulling babies to sleep for about a hundred years with its soft, waltzing melody. In this edition of "Microtones," I've programmed a version of the "Cradle Song" that will transform your micro into a music box extraordinaire. All you have to do is type in the program listing for your computer, SAVE it, then RUN it (making sure the volume is turned up on your video monitor or TV). With a little luck, your young ones (and maybe even your pets) will nod out in no time. But, if some family members fall asleep who aren't supposed to, you may find it appropriate to boot up *Frightening Lightning* from the October 1986 issue. Just kidding . . . .

Apple II series/*Cradle Song*

```
10 DIM P(55),D(55)
20 HOME:VTAB 13:HTAB 12
30 PRINT "* CRADLE SONG *"
40 FOR X = 0 TO 36:READ A:POKE 768+X,A:NEXT X
50 FOR X = 1 TO 55:READ P(X),D(X):NEXT X
60 FOR X = 1 TO 55:POKE 6,60*D(X):POKE 8,P(X)*2
70 CALL 768:NEXT X:GOTO 60
999 REM --MACHINE LANGUAGE DATA--
1000 DATA 165,8,201,2,176,2,169,2,74,133,10,164,8
1010 DATA 240,8,173,48,192,234,234,136,208,251,56
1020 DATA 165,7,229,10,133,7,176,235,198,6,208,231,96
1999 REM --MUSIC DATA--
2000 DATA 0,4,81,1,81,1,68,2,81,2,81,2,68,2,0,2,81,1
2010 DATA 68,1,50,2,53,3,60,1,60,2,68,2,91,1,81,1,76,2
2020 DATA 91,2,91,1,81,1,76,2,0,2,91,1,76,1,53,1,60,1
2030 DATA 68,2,53,2,50,2,0,2,102,1,102,1,50,4,60,1
2040 DATA 76,1,68,4,81,1,102,1,76,2,68,2,60,2,68,4
2050 DATA 102,1,102,1,50,4,60,1,76,1,68,4,81,1,102,1
2060 DATA 76,2,81,2,91,2,102,2
```

Atari 800/XL/XE/*Cradle Song*

```
10 DIM V1(55,2),V2(64,2),V3(47,2)
20 POKE 710,96:POKE 752,1
30 FOR X=1 TO 55:READ A,B:V1(X,1)=A:V1(X,2)=B:NEXT X
40 FOR X=1 TO 64:READ A,B:V2(X,1)=A:V2(X,2)=B:NEXT X
50 FOR X=1 TO 47:READ A:IF X=1 THEN V3(X,2)=6:GOTO 70
60 V3(X,2)=2:IF X=47 THEN V3(X,2)=4
70 V3(X,1)=A:NEXT X:PRINT CHR$(125)
80 POSITION 11,12:PRINT "* CRADLE SONG *";
90 P1=1:P2=1:P3=1:T1=0:T2=0:T3=0
100 SOUND 1,V1(P1,1),10,8
110 SOUND 2,V2(P2,1),10,4
120 SOUND 3,V3(P3,1),10,4
130 FOR DE=1 TO 60:NEXT DE
140 T1=T1+1
150 IF T1=V1(P1,2) THEN T1=0:P1=P1+1:SOUND 1,0,0,0
160 T2=T2+1
170 IF T2=V2(P2,2) THEN T2=0:P2=P2+1:SOUND 2,0,0,0
180 T3=T3+1
190 IF T3=V3(P3,2) THEN T3=0:P3=P3+1:SOUND 3,0,0,0
200 IF P1=56 THEN 90
210 GOTO 100
999 REM --MELODY--
1000 DATA 0,4,162,1,162,1,136,2,162,2,162,2,136,2,0
1010 DATA 2,162,1,136,1,102,2,108,3,121,1,121,2,136
1020 DATA 2,182,1,162,1,153,2,182,2,182,1,162,1,153
1030 DATA 2,0,2,182,1,153,1,108,1,121,1,136,2,108,2
1040 DATA 102,2,0,2,204,1,204,1,102,4,121,1,153,1
1050 DATA 136,4,162,1,204,1,153,2,136,2,121,2,136,4
1060 DATA 204,1,204,1,102,4,121,1,153,1,136,4,162,1
1070 DATA 204,1,153,2,162,2,181,2,204,4
1999 REM --HARMONY--
2000 DATA 0,6,81,1,102,2,136,2,68,1,81,1,102,2,136
2010 DATA 2,81,1,68,1,40,2,40,2,50,1,50,1,53,2,76
2020 DATA 2,68,1,68,1,76,2,68,2,60,1,60,1,76,2,68
2030 DATA 2,60,1,60,1,68,2,68,2,37,1,37,1,40,2,40
2040 DATA 2,0,1,50,1,60,1,50,3,29,1,40,1,50,1,33,3
2050 DATA 40,1,45,1,53,1,45,1,68,1,45,1,68,1,40,4
2060 DATA 0,2,50,1,60,1,50,3,29,1,40,1,50,1,33,3
2070 DATA 40,1,45,1,33,1,50,1,29,1,37,1,53,1,50,4
2999 REM --BASS--
3000 DATA 0,204,81,136,204,81,136,204,68,136,204,91
3010 DATA 136,204,91,136,204,91,136,204,68,136,204,68
3020 DATA 136,204,76,136,204,81,136,204,91,136,204,81
3030 DATA 136,204,76,153,204,81,136,204,68,204,81
```

Commodore 64 & 128 (C 64 mode)/*Cradle Song*

```
10 DIM V1(55,3),V2(64,3),V3(47,3)
20 S=54272:FOR I=0 TO 23:POKE S+I,0:NEXT I
30 POKE S+24,15:POKE S+5,31:POKE S+6,241:POKE S+12,31
40 POKE S+13,241:POKE S+19,60:POKE S+20,68
50 FOR X=1 TO 55:READ V1(X,1),V1(X,2),V1(X,3):NEXT X
60 FOR X=1 TO 64:READ V2(X,1),V2(X,2),V2(X,3):NEXT X
70 FOR X=1 TO 47:READ V3(X,1),V3(X,2):V3(X,3)=2
80 IF X=1 THEN V3(X,3)=6
90 IF X=47 THEN V3(X,3)=4
100 NEXT X
110 POKE 53281,4:POKE 53280,3
120 PRINT CHR$(147):POKE 214,10:PRINT
130 PRINT TAB(13);CHR$(5);"* CRADLE SONG *"
140 P1=1:P2=1:P3=1:T1=0:T2=0:T3=0
150 POKE S+1,V1(P1,1):POKE S,V1(P1,2)
160 POKE S+8,V2(P2,1):POKE S+7,V2(P2,2)
170 POKE S+15,V3(P3,1):POKE S+14,V3(P3,2)
180 POKE S+4,33:POKE S+11,17:POKE S+18,33
190 FOR DE=1 TO 80:NEXT DE
200 T1=T1+1
210 IF T1=V1(P1,3) THEN T1=0:P1=P1+1:POKE S+4,32
220 T2=T2+1
230 IF T2=V2(P2,3) THEN T2=0:P2=P2+1:POKE S+11,16
240 T3=T3+1
250 IF T3=V3(P3,3) THEN T3=0:P3=P3+1:POKE S+18,32
260 IF P1<56 THEN 150
270 GOTO 140
999 REM --MELODY--
1000 DATA 0,0,4,12,143,1,12,143,1,14,239,2,12,143,2,12
1010 DATA 143,2,14,239,2,0,0,2,12,143,1,14,239,1,19
1020 DATA 239,2,18,209,3,16,195,1,16,195,2,14,239,2,11
1030 DATA 48,1,12,143,1,13,78,2,11,48,2,11,48,1,12,143
1040 DATA 1,13,78,2,0,0,2,11,48,1,13,78,1,18,209,1,16
1050 DATA 195,1,14,239,2,18,209,2,19,239,2,0,0,2,9,247
1060 DATA 1,9,247,1,19,239,4,16,195,1,13,78,1,14,239
1070 DATA 4,12,143,1,9,247,1,13,78,2,14,239,2,16
1080 DATA 195,2,14,239,4,9,247,1,9,247,1,19,239,4,16
1090 DATA 195,1,13,78,1,14,239,4,12,143,1,9,247,1,13
1100 DATA 78,2,12,143,2,11,48,2,9,247,4
1999 REM --HARMONY--
2000 DATA 0,0,6,25,30,1,19,239,2,14,239,2,29,223,1,25
2010 DATA 30,1,19,239,2,14,239,2,25,30,1,29,223,1,50
2020 DATA 60,2,50,60,2,39,223,1,39,223,1,37,162,2,26
2030 DATA 156,2,29,223,1,29,223,1,26,156,2,29,223,2,33
2040 DATA 135,1,33,135,1,26,156,2,29,223,2,33,135,1,33
2050 DATA 135,1,29,223,2,29,223,2,53,57,1,53,57,1,50
2060 DATA 60,2,50,60,2,0,0,1,39,223,1,33,135,1,39,223
2070 DATA 3,67,15,1,50,60,1,39,223,1,59,190,3,50,60,1
2080 DATA 44,193,1,37,162,1,44,193,1,29,223,1,44,193
2090 DATA 1,29,223,1,50,60,4,0,0,2,39,223,1,33,135,1
2100 DATA 39,223,3,67,15,1,50,60,1,39,223,1,59,190,3
2110 DATA 50,60,1,44,193,1,59,190,1,39,223,1,67,15,1
2120 DATA 53,57,1,37,162,1,12,143,4
```

```
2999 REM --BASS--
3000 DATA 0,0,9,247,25,30,14,239,9,247,25,30,14,239,9
3010 DATA 247,29,223,14,239,9,247,22,96,14,239,9,247
3020 DATA 22,96,14,239,9,247,22,96,14,239,9,247,29,223
3030 DATA 14,239,9,247,29,223,14,239,9,247,26,156,14
3040 DATA 239,9,247,25,30,14,239,9,247,22,96,14,239,9
3050 DATA 247,25,30,14,239,9,247,26,156,13,78,9,247
3060 DATA 25,30,14,239,9,247,29,223,9,247,25,30
```

IBM PC & compatibles/*Cradle Song*

```
10 DIM P(55),D(55):KEY OFF
20 CLS:LOCATE 14,11,0
30 PRINT "* CRADLE SONG *"
40 FOR X=1 TO 55:READ P(X),D(X):NEXT X
50 FOR X=1 TO 55:SOUND P(X),D(X)*4
60 SOUND 32767,.1:NEXT X:GOTO 50
999 REM --MUSIC DATA--
1000 DATA 32767,4,392,1,392,1,466,2,392,2,392,2,466,2
1010 DATA 32767,2,392,1,466,1,622,2,587,3,523,1,523,2
1020 DATA 466,2,349,1,392,1,415,2,349,2,349,1,392,1
1030 DATA 415,2,32767,2,349,1,415,1,587,1,523,1,466,2
1040 DATA 587,2,622,2,32767,2,311,1,311,1,622,4,523,1
1050 DATA 415,1,466,4,392,1,311,1,415,2,466,2,523,2
1060 DATA 466,4,311,1,311,1,622,4,523,1,415,1,466,4
1070 DATA 392,1,311,1,415,2,392,2,349,2,311,2
```

IBM PC*jr* & compatibles/*Cradle Song*

```
10 DIM A$(6),B$(6),C$(6):SOUND ON:KEY OFF:WIDTH 40
20 FOR X=1 TO 6:READ A$(X):NEXT X
30 FOR X=1 TO 6:READ B$(X):NEXT X
40 FOR X=1 TO 6:READ C$(X):NEXT X
50 CLS:LOCATE 14,11,0:PRINT "* Cradle Song *"
60 FOR X=1 TO 6:PLAY A$(X),B$(X),C$(X):NEXT X:GOTO 60
999 REM --MELODY--
1000 DATA V15T10002P2l8GGB-4G4G4B-4P4GB-
1010 DATA >E-4D4.CC4<B-4FGA-4F4FG
1020 DATA A-4P4FA->DC<B-4>D4E-4P4<E-E-
1030 DATA >E-2C<A-B-2GE-A-4B-4>C4
1040 DATA <B-2E-E->E-2C<A-B-2GE-
1050 DATA A-4G4F4E-2
1999 REM --HARMONY--
2000 DATA V13T10002P2.L8GE-4<B-4>B-GE-4<B-4>G
2010 DATA B->G4G4E-E-D4<A-4B-B-A-4<B-4>A-
2020 DATA >C<A-4<B-4>CC<A-4A-4>A-A-G4G4P8
2030 DATA >E-CE-4.C<GE-B-4.GFDF<B->F<B-
2040 DATA >G2P4>E-CE-4.C<GE-B-4.G
2050 DATA FB-E->C<A->D<B-2
2999 REM --BASS--
3000 DATA V15T10001P2.L4E->G<B-E->G<B-
3010 DATA E->B-<B-E->F<B-E->F<B-
3020 DATA E->F<B-E->B-<B-E->B-<B-
3030 DATA E->A-<A-E->G<B-E->F<B-
3040 DATA E->G<B-E->A-<A-E->G<B-
3050 DATA E->B-<B-E->G
```

Macintosh/*Cradle Song*

```
    DEFINT A-Z
    DIM V1(55,2),V2(64,2),V3(47,2),WAV(256)
    LOCATE 8,24:PRINT "* CRADLE SONG *"
    FOR X=-128 TO 127:WAV(X+129)=X:NEXT X
    WAVE 0,WAV:WAVE 1,WAV:WAVE 2,WAV
    FOR X=1 TO 55:READ V1(X,1),V1(X,2):NEXT X
    FOR X=1 TO 64:READ V2(X,1),V2(X,2):NEXT X
    FOR X=1 TO 47:READ V3(X,1):V3(X,2)=2
    IF X=1 THEN V3(X,2)=6
    IF X=47 THEN V3(X,2)=4
    NEXT X
  INITIALIZE:
    FOR DE=1 TO 1000:NEXT DE
    P1=1:P2=1:P3=1:T1=1:T2=1:T3=1
  SOUNDLOOP:
    IF T1=V1(P1,2) THEN SOUND V1(P1,1)*2,4.7,,0:SOUND
0,.3,,0:T1=0:P1=P1+1 ELSE SOUND V1(P1,1)*2,5,,0
    IF T2=V2(P2,2) THEN SOUND V2(P2,1),4.7,,1:SOUND 0,
.3,,1:T2=0:P2=P2+1 ELSE SOUND V2(P2,1),5,,1
    IF T3=V3(P3,2) THEN SOUND V3(P3,1),4.7,,2:SOUND 0,
.3,,2:T3=0:P3=P3+1 ELSE SOUND V3(P3,1),5,,2
    T1=T1+1:T2=T2+1:T3=T3+1
    IF P1<56 THEN SOUNDLOOP ELSE INITIALIZE
  REM --MELODY--
    DATA 0,4,196,1,196,1,233,2,196,2,196,2,233,2,0
    DATA 2,196,1,233,1,311,2,294,3,262,1,262,2,233
    DATA 2,175,1,196,1,208,2,175,2,175,1,196,1,208
    DATA 2,0,2,175,1,208,1,294,1,262,1,233,2,294,2
    DATA 311,2,0,2,156,1,156,1,311,4,262,1,208,1
    DATA 233,4,196,1,156,1,208,2,233,2,262,2,233,4
    DATA 156,1,156,1,311,4,262,1,208,1,233,4,196,1
    DATA 156,1,208,2,196,2,175,2,156,4
  REM --HARMONY--
    DATA 0 ,6,392,1,311,2,233,2,466,1,392,1,311,2,233
    DATA 2,392,1,466,1,784,2,784,2,622,1,622,1,587,2
    DATA 415,2,466,1,466,1,415,2,466,2,523,1,523,1,415
    DATA 2,466,2,523,1,523,1,466,2,466,2,831,1,831,1
    DATA 784,2,784,2,0,1,622,1,523,1,622,3,1047,1,784
    DATA 1,622,1,932,3,784,1,698,1,587,1,698,1,466,1
    DATA 698,1,466,1,784,4,0,2,622,1,523,1,622,3,1047
    DATA 1,784,1,622,1,932,3,784,1,698,1,932,1,622,1
    DATA 1047,1,831,1,587,1,624,4
  REM --BASS--
    DATA 0,156,392,233,156,392,233,156,466,233,156,349
    DATA 233,156,349,233,156,349,233,156,466,233,156
    DATA 466,233,156,415,233,156,392,233,156,349,233
    DATA 156,392,233,156,415,208,156,392,233,156,466
    DATA 156,392
```

Tandy Color Computer/*Cradle Song*

```
10 DIM P(55),D(55)
20 FOR X=1 TO 55:READ P(X),D(X):NEXT X
30 CLS
40 PRINT@232,"* CRADLE SONG *"
50 FOR X=1 TO 55
60 IF P(X)=0 THEN FOR D=1 TO D(X)*150:NEXT D:GOTO 80
70 SOUND P(X),D(X)*4
80 NEXT X:GOTO 50
999 REM --MUSIC DATA--
1000 DATA 0,4,147,1,147,1,165,2,147,2,147,2,165,2,0,2
1010 DATA 147,1,165,1,189,2,185,3,176,1,176,2,165,2
1020 DATA 133,1,147,1,153,2,133,2,133,1,147,1,153,2,0
1030 DATA 2,133,1,153,1,185,1,176,1,165,2,185,2,189,2
1040 DATA 0,2,117,1,117,1,189,4,176,1,153,1,165,4,147
1050 DATA 1,117,1,153,2,165,2,176,2,165,4,117,1,117,1
1060 DATA 189,4,176,1,153,1,165,4,147,1,117,1,153,2
1070 DATA 147,2,133,2,117,2
```

SOLUTIONS TO LAST MONTH'S PUZZLE

D	A	S			H	O	P	I		G	R	A	C	E
O	M	I	T		L	A	U	G	H		I	D	O	L
N	A	T	O			M	L	Y		F	O	C	I	
A	Z	U	R	E		P	O	B			B	O	O	
T	I		T	R	I	C	K	O	R	T	R	E	A	T
C	O	N	T		R	A	I	S	I	N				S
	G	R	I	M	E		N		D	T	P			
		I	S								O	R		
			E	N	D		R		H	E	R	O	S	
S				S	E	C	U	R	E		K	I	N	G
C	O	S	T	U	M	E	P	A	R	T	Y		O	H
A	P	T			O	A	T			S	P	I	R	O
R	E	A	R		N	S	U				I	R	K	S
E	R	I	E		S	E	R	V	E		G	I	L	T
D	A	N	D	Y		D	E	A	D			S	E	S

TIPS TO THE TYPIST

SOME GENERAL RULES

1. Read instructions and program headings carefully.

2. Don't let fatigue and boredom contribute to inaccuracy. If you're new to programming, type in a longer program in easy stages, SAVEing each installment as you go.

3. Assume that every character in a program listing must be copied accurately if a program is to work.

4. Watch out for potential trouble spots. About 90 percent of all typing errors occur in DATA statements.

5. Be aware that our program listings are printed 54 characters wide. Thus, a single BASIC program "line" (sometimes called a "logical line") may appear as several lines in our listing. If you are typing along and reach the right margin of the printed listing, don't press RETURN or ENTER before checking to see if the program "line" you're typing really ends there.

6. To correct an error in a BASIC program line, type the line in again from the beginning, and press RETURN or ENTER to replace the old line.

WHICH PROGRAM WILL RUN ON MY COMPUTER?

• IBM compatibility of BASIC programs is determined by both the hardware and the version of BASIC used. Our programs for IBM PC and compatibles are composed on IBM PCs and PCjrs, and are tested under most versions of BASIC available for these machines. Each "IBM PC and compatibles" program is also tested on a number of compatibles. For a rundown of the machines and versions of BASIC under which the program is guaranteed to work, see the chart at the beginning of *The Programmer*.

DEBUGGING HINTS

1. Write down any error messages you receive.

2. Look up error messages in your manual, and check the indicated lines for simple mistakes. Also check related lines, such as the DATA statements corresponding to a READ routine. Correct all the problems you can find, and SAVE a corrected copy of the program before typing RUN again.

3. LIST the program in screen-size chunks (check your manual for instructions on how to LIST parts of a program) or get a printout. Compare what you've typed in—letter by letter—to the published program. Make sure that you haven't dropped or mixed up some punctuation, switched uppercase text for lowercase, or vice versa, or miscounted the characters (and/or spaces) between a pair of quotes.

4. Mistakes in DATA statements are the single most common cause of program failures. If you can't find your error in the lines the computer specifies, check your DATA statements line by line, letter by letter, comma by comma.

5. If all else fails, turn off your computer and relax. Then try again the next day—exhausted proofreaders are careless proofreaders.

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o Commodore 1525/Gorilla Banana	5.00	4.50	6.00	5.50	—	—
o Epson AP 80, Seikosha 1000	7.00	6.50	8.00	7.50	9.00	8.50
Epson EX 800/1000	12.00	11.00	20.00	19.00	—	—
* Epson JX 80	4.50	4.00	11.00	10.00	—	—
• Epson LQ 800 (HD)	6.00	5.50	7.00	6.50	—	—
Epson LQ 1000 (HD)	7.00	6.50	—	—	—	—
o Epson LQ 1500	5.50	5.00	6.50	6.00	—	—
Epson LQ 2500 (HD)	12.00	11.00	20.00	19.00	—	—
+ Epson LX 80/86/90	5.00	4.50	6.00	5.50	7.00	6.50
+ Epson MX, FX, RX 80/85	4.50	4.00	5.50	5.00	6.50	6.00
o Epson MX, FX, RX 100/185	6.00	5.50	7.00	6.50	8.00	7.50
o IBM Proprinter	5.50	5.00	6.50	6.00	7.50	7.00
IBM Proprinter XL	7.50	7.00	—	—	—	—
* IDS Prism, IBM Color Printer	8.00	7.50	11.00	10.00	—	—
Nec P6/P2 (HD)	7.00	6.50	—	—	—	—
Nec P7/P3 (HD)	8.00	7.50	—	—	—	—
Nec P5 (HD)	7.00	6.50	—	—	—	—
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o Panasonic 1080,90,91,92	7.00	6.50	8.00	7.50	—	—
Panasonic 1093, RS LP VI+VIII	5.00	4.50	—	—	—	—
• Smith Corona D200/RS DMP 120	6.00	5.50	7.00	6.50	—	—
• Star NX 10, NL 10, NP 10	6.00	5.50	7.00	6.50	—	—
o Toshiba 1350/1351/RS DMP 2100	6.00	5.50	7.00	6.50	—	—

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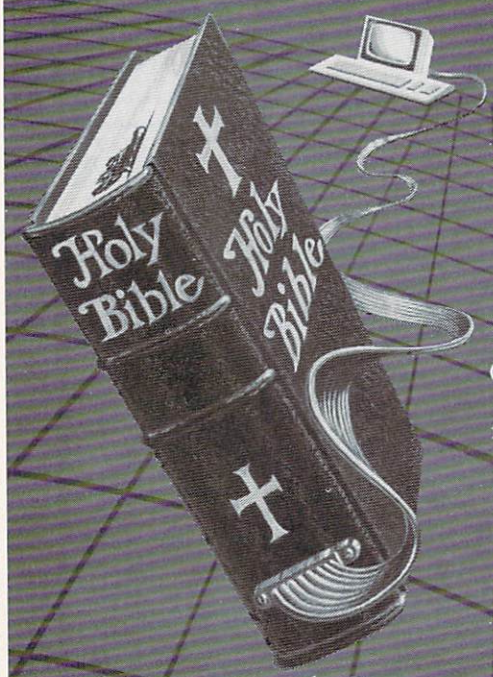

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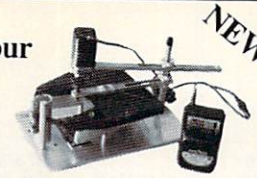

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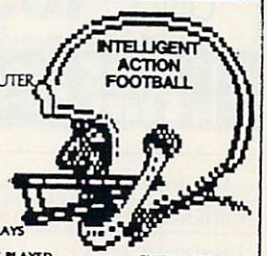

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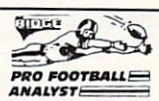

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CompuServe	19
Compucrafts	125
Confident Computer	125
Data Chem	92
Davidson & Associates	8
Disconix	13
Diskette Connection	92
Donaldson's	125
Epyx	31
Epyx	85
Epyx	99

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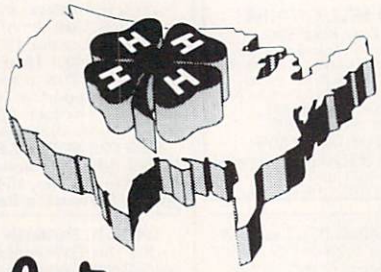

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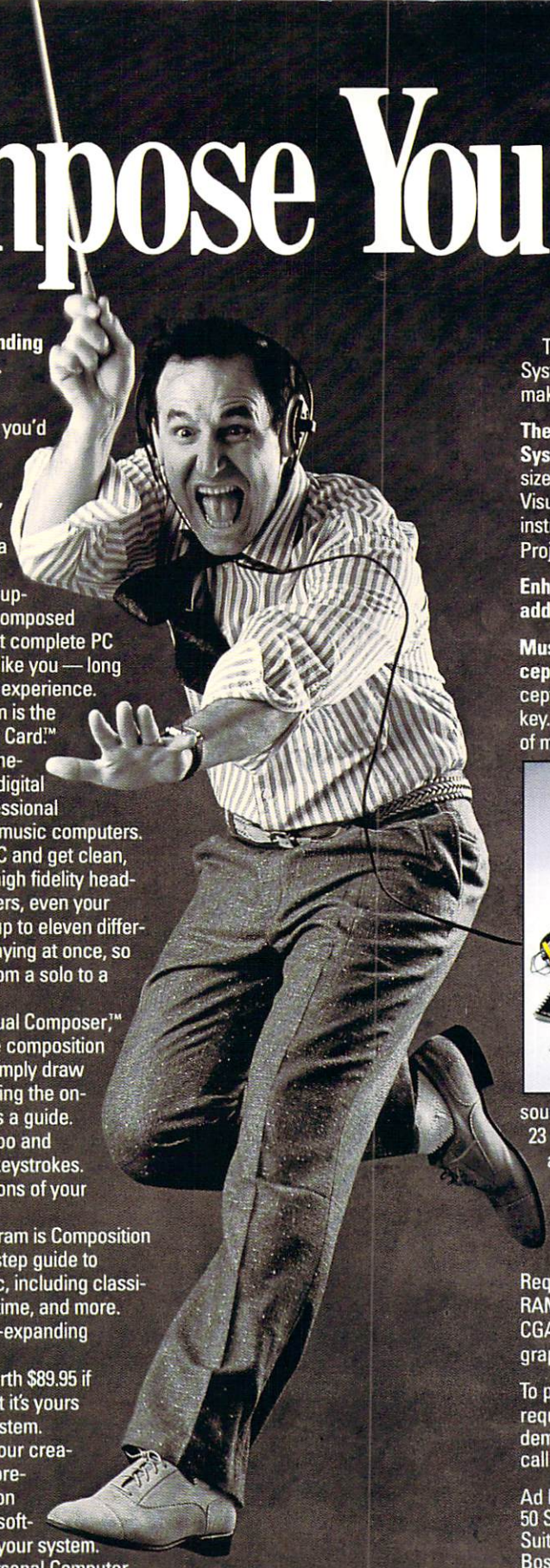
ADVERTISER INDEX NOVEMBER FAMILY & HOME OFFICE COMPUTING

Advertiser Index	Page No.
Family & Home Office Computing	105
Finally Technologies	90
Firebird Licensees	29
Great Game Products	123
Halix Institute	93
Hayes	21
IBM	5
ICR-Future Soft	117
Infocom	89
Intuit	15
Kraft Systems	71
Kraft Systems	73
Kyocera Unison World	101
Levy Computerware	123
MW Ruth	122
Magazines On Disk	75
MicroAide	124
Microcom Systems	6
Microprose	83
Microprose	87
Microsoft	C2, pg 1
NRI McGraw-Hill	81
NRI McGraw-Hill	97
Okidata	7
PC Enterprises	124
Parsons Technology	91
Playjour	91
Playjour	93
Precision Data	124
ProWriter Services	124
Protecto	107
Protecto	108
Protecto	109
Ribbonland	121
Scholastic	113
Scholastic	115
Scholastic	128
Sharp Computer	11
Sir-Tech	2
Soft-Byte	122
South Side Software	125
Spinnaker	35
Spinnaker	77
Spinnaker	79
Spinnaker	94
Strawberry Kite Collection	123
Sublogic	42
Sublogic	103
Superior Micro Systems	124
Sylvan Learning Corp.	26
Sylvan Learning Corp.	27
Tandy/Radio Shack	C4
Telegames USA	125
Tenex Computer Express	124
Time Works	17
U.S. Robotics	86
Vendex Pacific	39
Video Technology Computers	69
Video Technology Industries	32
Video Technology Industries	33
Viking Uptime	9
Western Temporary Services	88
Yunada	123
Zebra Systems	124

Compose Yourself!



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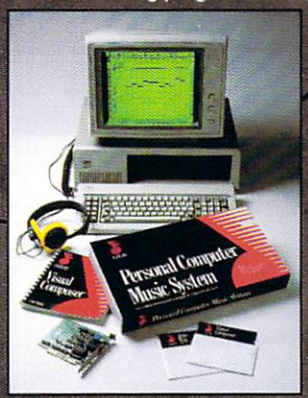

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